

RELATIONSHIP BETWEEN COUNTY LOCAL OPTION SALES TAX  
ABILITY AND COUNTY FISCAL CAPACITY AND EFFORT  
TO SUPPORT THE PUBLIC SCHOOLS OF TENNESSEE

By

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To my wife, Sandy, my daughter, Ashley, and to  
two wonderful parents all of whom have provided me  
with faith, love, and encouragement.

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## TABLE OF CONTENTS

	<u>Page</u>
ACKNOWLEDGMENTS . . . . .	iii
LIST OF TABLES. . . . .	vii
ABSTRACT. . . . .	viii
CHAPTER	
I INTRODUCTION. . . . .	1
Statement of Problem. . . . .	2
Delimitations . . . . .	3
Limitations . . . . .	4
Justification of the Study. . . . .	4
Assumptions . . . . .	6
Definitions . . . . .	6
Procedures. . . . .	7
Formulation of Null Hypotheses. . . . .	8
Test of Significance. . . . .	10
Measures of Capacity. . . . .	11
County Property Wealth. . . . .	11
County Local Option Sales Tax Ability .	13
Combined Property and Local Option	
Sales Tax Ability . . . . .	14
Measures of Effort. . . . .	16
II REVIEW OF RELATED LITERATURE AND RESEARCH . . .	18
Measures of Fiscal Capacity . . . . .	19
Property Wealth as a Measure of	
Capacity. . . . .	21
Measures Based Upon Income Alone. . . .	27
Uniform Tax Systems . . . . .	35
Development of Tennessee Capacity Measures.	39
Early Attempts at Equity and Adequacy .	39
First Comprehensive Equalization Plan .	42
Implementation of the Index of Taxpay-	
ing Ability . . . . .	44
Tennessee Educational Finance Act of 1977 .	47
Summary . . . . .	50

## TABLE OF CONTENTS (continued)

CHAPTER		<u>Page</u>
III	PRESENTATION AND DISCUSSION OF THE DATA . . . . .	53
	Measures of County Fiscal Capacity. . . . .	54
	County Adjusted Property Valuations . . . . .	54
	County Potential Property Tax Yields/ADA. . . . .	56
	County Adjusted Local Option Sales Tax Ability . . . . .	56
	County Potential Sales Tax Yields/ADA . . . . .	61
	Combined Property and Local Option Sales Tax Ability . . . . .	66
	Measures of County Effort . . . . .	67
	County Property Wealth Effort Indices . . . . .	67
	County Local Option Sales Tax Effort Indices . . . . .	72
	County Combined Ability Effort Indices . . . . .	72
IV	FINDINGS. . . . .	74
	Relationship Between Measures of Local Option Sales Tax Ability and County Fiscal Capacity to Support Programs of Education . . . . .	75
	Relationship Between County Adjusted Local Option Sales Tax Ability and County Adjusted Property Values . . . . .	77
	Relationship Between County Potential Sales Tax Yields/ADA and Potential Property Tax Yields/ADA . . . . .	78
	Relationship Between County Adjusted Property Values and Combined Property and Local Retail Sales Ability Indices. . . . .	85
	Relationship Between County PPTY/ADA and Combined County Potential Property and Sales Tax Yields/ADA. . . . .	86
	Relationship Between Local Option Sales Tax Ability and County Effort . . . . .	87
	Relationship Between County Potential Sales Tax Yields/ADA and Local Option Sales Tax Effort. . . . .	88
	Relationship Between County Potential Sales Tax Yields/ADA and County Property Wealth Effort/ADA. . . . .	89
	Relationship Between County Potential Sales Tax Yields/ADA and Combined County Local Option Sales and Property Wealth Effort/ADA . . . . .	90

## TABLE OF CONTENTS (continued)

CHAPTER	<u>Page</u>
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">IV</div> <div style="width: 80%;"> Relationship Between Combined (PSTY and PPTY)/ADA and Combined (Local Option Sales and Property Tax Effort)/ ADA . . . . . </div> <div style="width: 10%; text-align: right;">91</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 10%;">Summary . . . . .</div> <div style="width: 80%;"></div> <div style="width: 10%; text-align: right;">91</div> </div>	
<div style="display: flex; justify-content: space-between;"> <div style="width: 10%;">V</div> <div style="width: 80%;">SUMMARY, CONCLUSIONS, AND IMPLICATIONS. . . . .</div> <div style="width: 10%; text-align: right;">93</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 10%;">Summary . . . . .</div> <div style="width: 80%;"></div> <div style="width: 10%; text-align: right;">93</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 10%;">Conclusions . . . . .</div> <div style="width: 80%;"></div> <div style="width: 10%; text-align: right;">97</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 10%;">Implications. . . . .</div> <div style="width: 80%;"></div> <div style="width: 10%; text-align: right;">103</div> </div>	
APPENDIX. . . . .	108
REFERENCES. . . . .	114
BIOGRAPHICAL SKETCH . . . . .	119

## LIST OF TABLES

TABLE		<u>Page</u>
1	Actual and Potential County Revenue for the Support of Programs of Education . . . . .	57
2	Wealth Indices Based on the Rationale Employed by the Tennessee Education Finance Act of 1977 . . . . .	62
3	Individual County Effort Indices for the Support of Programs of Education . . . . .	68
4	Tennessee County Ranks Based on Measures of Fiscal Capacity and Effort to Support Programs of Education . . . . .	79
5	Summary Data for County PSTY/ADA . . . . .	96
6	Summary Data for County PPTY/ADA . . . . .	96
7	Summary Data for County Effort Indices . . . . .	98

Abstract of Dissertation Presented to the Graduate Council  
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By

Benjamin Horace Brown, Jr.

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Chairman: Dr. S. Kern Alexander  
Major Department: Educational Administration

The primary problem for this investigation was to determine the relationship between county local option sales tax ability and county fiscal capacity and effort to support programs of public education in Tennessee. Investigation of this relationship required the development of measures of capacity and effort based upon local option sales tax ability, property wealth, and a combination of both.

Local option sales tax and property ability were selected as measures of local fiscal capacity because of the high percentage of total county support for education from the local option sales tax and the county property tax during the period of the study. County revenue receipts from these two sources comprised over 97.5 percent of all county revenue for the support of education in Tennessee during the 1977 fiscal year.



Formulae were developed for and presented in the study which combined each county's local option sales tax and property ability into a single index. These indices were a function of each county's individual local option sales tax ability, each county's property wealth, and the state-wide relative usage of each to support education.

Effort was defined in this study as the degree to which ability was utilized. Formulae were developed for and presented in the study which calculated each county's effort based upon property wealth, local option sales tax ability, and a combination of both.

Eight null hypotheses were developed to test the relationships between measures of local option sales tax ability and county fiscal capacity and effort to support programs of education.

The following conclusions were drawn from the study:

1. A significant positive relationship existed between counties ranked by local option sales tax ability and by property wealth.

2. A significant positive relationship existed between counties ranked by local option sales tax ability and by indices of combined local option sales tax and property ability.

3. No significant relationship existed between counties ranked by local option sales tax ability and by

measures of effort based upon local option sales tax ability.

4. A significant inverse relationship existed between counties ranked by local option sales tax ability and by measures of effort based upon property wealth.

5. No significant relationship existed between counties ranked by local option sales tax ability and by measures of effort based upon combined local option sales tax and property ability.

6. A significant inverse relationship existed between counties ranked by combined local option sales tax and property ability and by combined measures of effort based upon combined local option sales tax and property ability.

The procedures developed for this study can be used to develop indices of combined measures of ability based upon several sources of tax revenue. Tennessee could well utilize this methodology to include local option sales tax ability in the calculation of county fiscal capacity indices.

Counties with high combined local option sales tax and property ability were found to be making low effort. Inclusion of local option sales tax ability in calculations of required local contributions to the Tennessee minimum foundation program would constitute a first step in remedying this inequity.

## CHAPTER I

### INTRODUCTION

The expansion of our educational system since World War II constituted perhaps the greatest single indicator of the cultural as well as economic advantages of the free enterprise system. This expansion was characterized by rates of increase in enrollments and expenditures per pupil that exceeded those of population or of national income (Miner, 1968). As a consequence, increasing fiscal demands were placed on all levels of governmental units. Tax bases for meeting those demands were developed to provide the necessary flexibility and adequacy of yield to not only forestall financial crisis but provide the educational growth demanded by an increasingly brain intensive society.

The fiscal mainstay of support for education has historically been the property tax. However, the property tax cannot maintain this position without increasing support from other tax sources. Colm (1968) found for the United States as a whole projected revenues for education will rise more rapidly than projected property tax collections. Boulding (1968) stated:

The tax systems by which public education is supported tend to be regressive and inequitable, and they only seem to be tolerable as long as the total tax collections for these purposes are smaller than the needs of this sector of the economy. (p. 212)

The increasing strain on the available tax dollar for support of educational programs has reemphasized the need for equitable allocation of state revenues to individual school districts. Certainly indigenous to any consideration given to equitable allocation are objective measures of the fiscal capacities and efforts of local school districts. This study facilitated the statistical treatment of the problem by developing measures of county fiscal capacity in Tennessee which expanded the property index to include local option sales tax wealth.

#### Statement of Problem

The primary problem for this investigation was to determine the relationship between county local option sales tax ability and county fiscal capacity and effort to support programs for public education in Tennessee.

To further clarify the problem studied, the following questions were identified:

Question 1. To what extent were measures of fiscal capacity based on county local option sales tax ability related to measures of capacity based on county property wealth?

Question 2. To what extent were measures of capacity based

on county property wealth alone related to combined capacity indices based on property and local option sales tax ability?

Question 3. To what extent were measures of capacity based on local option sales tax ability related to measures of effort based on local option sales tax ability?

Question 4. To what extent were measures of capacity based on local option sales tax ability related to measures of effort based on county property wealth?

Question 5. To what extent were measures of capacity based on county local option sales tax ability related to measures of effort based on combined sales tax and property ability?

Question 6. To what extent were measures of capacity based on combined sales tax and property ability related to measures of effort based on combined sales tax and property ability?

#### Delimitations

1. This study made no attempt to define an "ideal" tax structure for a county nor recommended changes in the utilization of revenue sources.

2. This study developed measures of capacity and effort that were a function of present county use of the ability bases studied.

3. The data collected were confined to the 1976 and 1977 fiscal years and only represented those years.

4. All county tax revenue data used in this study represented that reported for current operation and maintenance only.

#### Limitations

1. This study was subject to the reliability of the data gathered from governmental sources.

2. The relationships between measures of capacity and effort were only as reliable as the degree to which the tax bases used for their determination were a true reflection of district wealth.

3. The relationships between measures of capacity and effort were only as valid as the accounting procedures used by the counties in reporting revenue receipts.

#### Justification for the Study

The State of Tennessee adopted a new plan for financing a minimum foundation program of public education May, 1977. A basic change was made in the procedure for determining each district's amount of state entitlement. However, the basic reliance on property wealth alone for determination of required local contributions did not change. Reliance on some measure of capacity or effort based on property wealth has remained in effect in Tennessee since 1909.

There existed little question as to the need for new studies of the relative capacity and effort of Tennessee counties to support education. The Advisory Commission on Intergovernmental Relations (ACIR, 1971) has specified three reasons for this type of study:

1. First, it is tremendously important that the general public be able to form some reasonable idea as to how well it is being served by the government.
2. Well-based financial comparisons are needed by responsible policymakers—governors, mayors, legislators and local councilmen and board members.
3. Thirdly, good comparative measures of fiscal ability are needed for policy-making and administration with regard to grants-in-aid from one level of government to another. (p. 2)

Since required local effort and fiscal capacity were inextricably linked in the state allocation formula, the basic concept of equity of treatment for taxpayers was impregnably involved in the measurement of relative fiscal ability.

It was hoped a careful examination of the relationship between county local option sales ability and county capacity and effort to support public education would provide an impetus to change the methodology of determining the county fiscal capacity as specified in the Tennessee Education Finance Act of 1977.

Tennessee initiated a study of the financing of her public schools December, 1977. The data and findings of this study comprise a portion of the Tennessee School Finance Study Report as filed with the Governor, August, 1978.

### Assumptions

1. Property tax assessments reported by the Tennessee State Board of Equalization were reliable.
2. Tax bases selected for this study were valid indicators of district fiscal capacity to support education.
3. Revenue receipts reported by the counties were reliable.
4. Similar fiscal relationships for the financing of public schools existent among various states allowed the use of general statistical inference tests for measuring strengths of relationships in this study.

### Definitions

ADA—Average Daily Attendance. The aggregate number of days the pupils of a school district were in attendance divided by the number of school days in the school year.

Assessment Ratio. The average ratio of assessed valuation to sales price for property within a certain class within a county (used to provide a ratio of assessed value to true market value).

Capacity. The ability to generate revenue.

Effort. A measure of the degree to which capacity is exercised.

Equalized Assessed Valuation. The full adjusted valuation of real property which is taxable in support of education.



State Fiscal Average Effort. A county levying the state fiscal average rate is making the state fiscal average effort.

State Fiscal Average Rate. The total state revenue from a base expressed as a percentage of the base.

Wealth. The amount of a tax base(s) available for taxation.

### Procedures

This investigation was designed to determine the relationship between county local option sales tax ability and county fiscal capacity and effort to support programs of public education. The investigation was an exploratory field study. Such studies are designed to (1) identify significant variables as they exist in a real situation, (2) discover relations among the variables, and (3) provide a basic framework for future development, refinement, and testing of hypotheses.

Because this study involved all of the 95 counties of Tennessee, no sampling technique was used. The local option sales tax base was selected for analysis with respect to impact on capacity and effort of the counties because of the degree of utilization of this base as a source of local revenue in fiscal year 1977. Local option sales tax yields provided over 33 percent of the county revenue receipts for the current operation and maintenance of county programs of education during this period.

All data collection was from governmental sources. Equalized assessed valuations, Tennessee Valley Authority payments through the State of Tennessee to the counties and payments directly to counties were obtained from the State Board of Equalization. Tennessee state retail sales tax collections by county were obtained from the Tennessee Department of Revenue. County ADA, school taxes current year, school taxes prior year, pick-up taxes, interest and penalty on delinquent school taxes, payments in lieu of county taxes, and county local option sales tax revenue for education data were obtained from the State Department of Education.

Equalized assessed valuations, Tennessee Valley Authority payments, and Tennessee state retail sales tax collections were fiscal year 1976. All other fiscal and ADA data were fiscal year 1977. Data with one fiscal year discrepancy were used to simulate the methodology employed by the Tennessee Education Finance Act of 1977. This methodology was adopted by the Act because of the unavailability of the Tax Aggregate Report of Tennessee issued by the State Board of Equalization until April 12-15th of each year and the necessity of calculating local requirements for the minimum foundation program prior to that date.

#### Formulation of Null Hypotheses

The study was designed to examine the relationship between county local option sales tax ability and measures of county fiscal capacity and effort to support programs

of public education. Two measures of wealth were developed for analysis with respect to determining the degree of relationship present.

Firstly, measures of local option sales tax ability and county property wealth were developed using guidelines specified in the Tennessee Education Finance Act of 1977 (see Chapter II of this study). These measures of wealth were designated in this study as county adjusted local option sales tax ability and county adjusted property valuations respectively.

Secondly, measures of county local option sales tax ability and county property wealth were calculated using a state fiscal average rate procedure explained in detail later in this chapter. These measures of wealth were designated and abbreviated as potential sales tax yield (PSTY) and potential property tax yield (PPTY), respectively.

The operational null hypotheses developed from the questions to be answered in determining the relationship between measures of local option sales tax ability and measures of county fiscal capacity stated:

1. There is no significant relationship between the county adjusted local option sales tax ability and county adjusted property valuations.
2. There is no significant relationship between the county PSTY/ADA and county PPTY/ADA.

3. There is no significant relationship between county adjusted property valuations and combined wealth indices based on property and local retail sales.
4. There is no significant relationship between the county PPTY/ADA and combined (county potential property and sales tax yields)/ADA.

The operational null hypotheses developed from the questions to be answered in determining the relationship between local option sales tax ability and measures of county effort to support programs of education stated:

5. There is no significant relationship between county PSTY/ADA and county local option sales tax effort/ADA.
6. There is no significant relationship between county PSTY/ADA and county property wealth effort/ADA.
7. There is no significant relationship between county PSTY/ADA and combined (local option sales and property tax effort)/ADA.
8. There is no significant relationship between combined (PSTY and PPTY)/ADA and combined (local option sales and property tax effort)/ADA.

#### Test of Significance

Through the rank order method of correlating data, coefficients of correlation were obtained to determine the

extent of the inverse or positive relationship between the measures of local option sales tax ability and measures of county capacity and effort to support programs of education.

A t-test of significance was applied to the coefficients obtained from the rank-order method. The test was applied to each coefficient through formulating the following problem:

1.  $H_0 : r' = 0$  (i.e.,  $r$  is not significant)
2.  $H_1 : r' \neq 0$  (i.e.,  $r$  is significant)
3. If  $H_0$  is not rejected, it will be retained.
4. level = .05,  $t_{.05 \text{ at } 93 \text{ df}} = .170$ .  
level = .01,  $t_{.01 \text{ at } 93 \text{ df}} = .238$ .
5. If calculated  $t \leq -.170$  or  $\geq +.170$ , reject  $H_0$  and retain  $H_1$  at .05 level.
6. If calculated  $t \leq -.238$  or  $\geq +.238$ , reject  $H_0$  and retain  $H_1$  at .01 level.

### Measures of Capacity

#### County Property Wealth

Two methods were employed for calculating fiscal capacity based on county property wealth. Method 1 utilized the procedure specified by the Tennessee Education Finance Act of 1977 for determining county adjusted

property valuations (see Chapter II of this study). Each county's adjusted property valuation thus determined was expressed as a percent of the state total adjusted property valuation for analysis. A county's percent of state adjusted property value represented the county's percent of any state aggregate local requirement under the Tennessee Education Finance Act of 1977.

Method 2 for calculating fiscal capacity based on county property wealth produced (PPTY)/ADA for each county. The following formula was used to calculate PPTY:

$$\text{County A PPTY} = \frac{\text{County A adjusted property valuation}}{\text{Total state adjusted property valuation}} \times \left[ \begin{array}{l} \text{Total state} \\ \text{(School taxes current year +} \\ \text{School taxes prior year +} \\ \text{Pick-up school taxes +} \\ \text{Interest and Penalty on} \\ \text{delinquent school taxes +} \\ \text{Payments in lieu of} \\ \text{county taxes)} \end{array} \right] (1)$$

PPTY thus determined represented the dollar yield from property available in each county of the state if the state fiscal average effort were exercised. Each county PPTY was divided by the county ADA to determine county PPTY/ADA dollar amounts.

### County Local Option Sales Tax Ability

Two methods were employed for calculating fiscal capacity based on county local option sales tax ability. Method 1 paralleled Method 1 used for determining fiscal capacity based on county property wealth.

State sales tax was collected at a rate of 4.5 percent in each county during the 1977 fiscal year. Local option sales tax was collected "piggyback" from the same retail sales base but at varying county rates statewide according to local referendum. The following formula was used to calculate each county's percent of the total state retail sales base available for local option sales tax levies:

County A percent of state retail sales base =

$$\frac{\text{State retail sales tax collections in County A}}{\text{Total state retail sales tax collections}} \times 100. \quad (2)$$

The data thus developed were statistically compatible for analysis with county adjusted property valuations developed using methods specified under the Tennessee Education Finance Act of 1977. County local option sales tax ability data generated using Formula 2 were designated "county adjusted local option sales tax ability" for use in this study.

Method 2 for calculating fiscal capacity based on county local option sales tax ability produced PSTY for

each county. Method 2 paralleled Method 2 used for determining PPTY for each county. The following formula was used to calculate each county's PSTY:

County A PSTY =

$$\frac{\text{State retail sales tax collection in County A}}{\text{Total state retail sales tax collections}} \times \left[ \begin{array}{l} \text{State total local} \\ \text{option sales tax} \\ \text{revenue for the} \\ \text{current operation} \\ \text{and maintenance of} \\ \text{programs for} \\ \text{education} \end{array} \right] \quad (3)$$

PSTY thus determined represented the dollar yield from the local option sales tax base available in each county of the state if the state fiscal average effort were exercised. Each county PSTY was divided by the county ADA to determine county PSTY/ADA dollar amounts.

PSTY and PSTY/ADA thus developed were statistically compatible for analysis with county PPTY and PPTY/ADA.

#### Combined Property and Local Option Sales Tax Ability

Capacity measures which were based on both property and local option sales tax ability were calculated using the following formula:

Combined ability index for County A =

$$\frac{a \left[ \begin{array}{l} \text{County A percent of} \\ \text{state retail sales base} \end{array} \right] + b \left[ \begin{array}{l} \text{County A percent of state} \\ \text{adjusted property valuation} \end{array} \right]}{a+b} \quad (4)$$



where a =

$$\frac{\text{Total state local option sales tax revenue for education}}{\text{Total county revenues for education}} \times 100, \quad (5)$$

and

$$b = \frac{\text{Total state} \left( \begin{array}{l} \text{(school taxes current year} \quad + \\ \text{school taxes prior year} \quad + \\ \text{pick-up school taxes} \quad + \\ \text{interest and penalty on delinquent} + \\ \text{school taxes} \\ \text{payments in lieu of county taxes)} \end{array} \right)}{\text{State total county revenues for education}} \times 100. \quad (6)$$

Combined ability indices computed using Formula 4 represented each county's percent of the 95 county total fiscal capacity to support education where fiscal ability was defined as a weighted average of county property and local option sales tax bases. These indices were a function of the statewide utilization of the property and local option sales tax bases for county support of education during the 1977 fiscal year.

A second set of combined measures of ability were computed using data generated in Formulae 1 and 3. Total potential revenue per ADA from the property and local option sales tax bases was calculated by summing PPTY/ADA and PSTY/ADA for each county. This combined ability measure represented the combined dollar yield available in each

county for each pupil in ADA from the property and local option sales tax bases if both of these bases were taxed respectively at rates representing their statewide fiscal average county usage to support local programs of education.

### Measures of Effort

The concept of effort accepted in formulating an operational definition for use in this study was taken from the 1971 ACIR national study of state and local effort. For purposes of this study effort was defined as the degree to which counties were using their fiscal capacities to support the current operation and maintenance of programs of education. An index of 100.0 indicated a county was making the state fiscal average effort on a particular tax base.

Effort indices for counties based on property wealth were calculated by the following formula:

County A property effort index =

$$\frac{\text{County A} \left[ \begin{array}{l} \text{School taxes current year} + \\ \text{School taxes prior year} + \\ \text{Pick-up school taxes} + \\ \text{Interest and penalty on} \\ \text{delinquent school taxes} + \\ \text{payments in lieu of} \\ \text{county taxes} \end{array} \right]}{\text{County A PPTY}} \times 100. \quad (7)$$

Effort indices for counties based on local option sales tax ability were calculated by the following formula:

County A local option sales tax effort index =

$$\frac{\left( \begin{array}{l} \text{County A local option sales tax revenue} \\ \text{for current operation and maintenance} \\ \text{of programs of education} \end{array} \right)}{\text{County A PSTY}} \times 100. \quad (8)$$

County A combined ability effort indices =

$$\frac{\text{Formula (7) numerator} + \text{Formula (8) numerator}}{\text{County A (PPTY + PSTY)}} \times 100. \quad (9)$$

The foregoing formulae were designed to generate measures of capacity and effort for use in testing the null hypotheses. Data generated by Formulae 1 through 9 were computed in a manner compatible with rationale utilized in the methodology employed in the Tennessee Education Finance Act of 1977 to determine county fiscal capacity. Applications of these formulae are demonstrated and analyses of these treatments are described in Chapter III.

## CHAPTER II

### REVIEW OF RELATED LITERATURE AND RESEARCH

Consensus on the method of determination of the fiscal capacity and effort of a local school district has eluded educators, politicians, and economists alike. Reasons for disagreement are professed to be multiple; however, among the most pertinent ranks the realization that the acceptance of any particular method would cost some districts money. Also significant are the difficulties associated with attempting to isolate capacity and effort to support a single cost dimension (education) from the capacity and effort of a state or local jurisdiction to finance the entire spectrum of public need.

The review of related literature provides a background of information and knowledge tracing the development of rationale utilized in fiscal capacity measures. From this review a basis was developed for measuring the fiscal capacity and effort of Tennessee counties to support education.

This chapter consists of two parts. Part one traces the development of fiscal capacity measures with special attention to basic rationales employed. Studies analyzing

capacities of states and localities were examined with respect to methodology. Part two is devoted to the development of capacity measures employed by the State of Tennessee spanning the period from 1909 to 1977.

### Measures of Fiscal Capacity

Two basic approaches have been developed by researchers in attempting to measure fiscal capacity and effort. One approach utilized economic indicators, notably some refinement of income or wealth, out of which all taxes were paid. The second approach subjected available tax bases to various levels of tax rates in an attempt to determine "potential" revenue levels from a uniform tax system. Conceptually these approaches represented a choice between an absolute "capacity" measure and an "ability to pay" approach.

Capacity measures based on revenue "potential" have not relied on single revenue bases. Instead, composite measures of potential yields from income, property, and consumption were calculated for analysis. This approach seems to capture the true meaning of fiscal.

Webster traced the origin of the word fiscal to a Latin term for public chest, and defined it as "relating to the public treasury or revenues" (Webster's new, 1971, p. 210). Incorporating this concept of fiscal, an Advisory Commission on Intergovernmental Relations (ACIR) study in 1971 defined fiscal capacity as being concerned with the ability of governments to obtain resources for public

purposes. The emphasis was not on individual tax burdens. Measures of fiscal effort were determined as a gauge of how much of their capacity governments were actually using.

Relative to the use of economic indicators to measure fiscal capacity, discussions have centered around the alternative acceptance of the economic concepts of stock and flow. Alkin (1965) asks the question,

Should a measure which represents the yearly flow of funds such as "income" be used as the measure of financial ability or, alternately, should the choice be a measure which is representative of the total stock of accrued fiscal capacity such as "wealth" or property valuation? (p. 10)

Measures involving only single bases have emphasized a concern for individual taxpayer burden (ability to pay) whereas measures involving multiple revenue bases were concerned with actual dollar capacities of jurisdictions (potential revenue). The ACIR (1971) succinctly summarized this point by stating:

It is especially important to observe that fiscal capacity involves the financing capabilities of governments rather than the economic well-being of people. The two are interrelated, because governments depend mainly for their financing upon taxes and other revenue sources that tap the income, transactions, or property holdings of people. (p. 4)

The basic problem in determining fiscal capacity, then, rests in the necessity of choosing between a measure of revenue potential, a measure of ability to pay, or a measure giving equitable weight to each. Hickrod and Sabulao (1969) commented:

If the two principal measurements of "ability" or "wealth", that is income and property valuations, were closely correlated then the debate over which is a "better" measurement of ability to support education would have little importance. . . . The following state-wide correlations between the two variables have been observed: .57 (Wisconsin), .40 (New York), .38 (Oregon), .34 (California), .30 (Massachusetts), .26 (New Jersey), .09 (New Mexico), .01 (Washington), and one negative correlation, -.18 (Nebraska). . . . Present thinking in the field does seem to be more favorable toward a mixture of property valuations and income, or property valuations, income and the sales tax base, rather than simply property valuations alone. There is no agreement on the proportions in this mixture. (p. 39)

#### Property Wealth as a Measure of Capacity

Historically, the most prevalent indicator of fiscal capacity to support education has been the assessed valuation of property per pupil. Alford (1963) stated that, "By 1942, the general property tax amounted to only 3.8 percent of all state revenues, as compared with 25.6 percent in 1922 and 42.7 percent in 1902" (p. 2). This trend allowed the local governments to increase their utilization of the property tax in a dramatic fashion. Johns and Morphet (1969) pointed out that by 1966 local governments were collecting 87.1 percent of all property taxes levied with a national average indicating schools to be receiving 98 percent of their local revenue from this source.

Due (1970) determined that nationwide, local governments received about \$30 billion or 86 percent of their tax revenue from the property tax during fiscal year 1969

despite expansion of local nonproperty taxes. School districts received 99 percent of their local tax revenue from the property tax during the same period.

The high level of support for education from property has prompted many researchers in school finance to determine assessed valuations per pupil for inter district wealth comparisons with no further discussion or refinement of the measure. However, comparable property valuations are not easily obtained on an interstate basis without using questionable sales ratio techniques. Alkin (1965) observed that, " . . . a pattern has been reasonably well established of using property valuation as a measure of fiscal capacity in inter district comparisons and of using income as a measure in the examination of fiscal capacities between states" (p. 11).

Hickrod et al. (1975) has advised the use of caution in blind reliance on property valuations by stating, " . . . while 'property valuations' have been accepted for half a century as the measure of local fiscal capacity, there is now, and there has been for sometime, reservations concerning the validity of this specification of fiscal capacity" (p. 45).

Hickrod's concern was based upon observed assessment practices in the State of Illinois. Underassessment has been traditionally rewarded with more funds from the state, or less local requirement, or both. Validity of measures



based on property valuation in any state remains in the hands of a determined and persistent effort at the state level for equalized assessments.

During the decade of the forties, Johns pioneered the implementation of "Indices of Taxpaying Ability." By 1955, some states, either because assessed valuation had not been equalized or because a satisfactory plan for determining assessment ratios had not been established, adopted this method of ability determination (Johns & Morphet, 1960).

The Index of Taxpaying Ability was not designed nor intended to be a measure of total fiscal capacity. Instead, the approach was designed to measure the relative ability of local school systems to pay property taxes. This Index functioned as a surrogate measure of relative equalized assessed property wealth.

The procedure employed was to regress economic factors (e.g., sales tax receipts, automobile license tax paid, value of farm products sold, and number of gainfully employed workers) on the true value of property in those counties where reliable property data were available (Johns & Morphet, 1960). Weightings assigned to each economic factor were then used to calculate ability indices based on relative true property wealth in all counties of a state.

The basic rationale was that property remained the best indicator of local ability to finance education and should be used as such even if relative property wealth had to be estimated statistically. An additional rationale for using property wealth as a measure of capacity rests in the relationship between property valuations and expenditures for education.

Weiss (1970) evaluated 1,384 communities in the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont using property valuation as the measure of financial ability. Simple correlations between financial ability and current expenditure per resident pupil were significant for every state studied. Brazer (1962), Hirsch (1960), Sacks et al. (1963), Kee (1965), and Garms (1967) all have conducted significant research in correlating per pupil expenditure to wealth of districts and all have found property valuations to have high correlations.

At Stanford, James, Thomas, and Dyck (1963) utilized a model with data from 589 school districts in 10 states to analyze variations in per pupil current operating expenditures. Property valuations surfaced as a significant element in explaining 77 percent of expenditure per pupil variation.

A 1969 study by Hickrod and Sabulao of five metropolitan areas (Boston, Chicago, Cleveland, Detroit, and

St. Louis) identified assessed property valuation per pupil as the leading predictor of school expenditures in three of the areas and second best in the remaining two.

Research cited seems to indicate that people tend to spend what they "can" for education. Since property wealth is the largest single base available for local taxation, a natural relationship should and does exist between this revenue source and local expenditure for education. The rationale employed in developing fiscal capacity measures based upon consideration for potential revenue for education has led researchers to adopt property wealth per pupil data.

Recently, criticism of using property alone as a measure of local wealth has emerged. In an attempt to unite the considerations for potential revenue and individual taxpayer burden several researchers have suggested combined measures of property and income (Hou & Carson, 1977). Odden (1977) indicated that property was no longer an accurate measure of wealth for either school districts or individuals.

This expressed concern is not novel; however, pioneer research in the field of fiscal capacity determination focused on a combination of income and property wealth. Strayer and Haig (1923) formulated an index for the counties of New York based on the average of taxable income

per county plus one-tenth of the full value of the county's real estate. Norton (1926) used a three-year average state income plus one-tenth of all tangible property to develop indices of capacity on an interstate basis. Over 40 years later James and Cronin (1969) commented explicitly on this point:

Neither measures of property value nor measures of income constitute the sole valid estimate of community taxpaying ability in all communities. Present reliance on one or the other of the two lead to unintentional inequities in both taxation and distribution schemes. Future researchers doubtless will continue to identify the differences of the two measures, and the possibility of developing an equitable mixture of the two or of finding other valid measures of wealth. (p. 4)

Benson and Kelly (1967) shared a similar philosophy after conducting a 1966 school facilities study in Rhode Island. They believed income and property to both be viable measures of ability. Certain areas of Rhode Island were found to be high in property values and low in income, and vice versa. Industrial cities were frequently low in income but high in property values. They commented:

Because the two measures represent different dimensions of taxpaying ability, the state should take each into account in determining local wealth for state aid purposes. (p. 34)

As a result of the work of Benson and Kelly, Rhode Island adopted a combination of income and assessed valuation into their 1968 state aid formula. Equalized assessed valuation was adjusted by the ratio of the school district

median family income to the state median family income (Hou & Carson, 1977). Rhode Island did not represent an isolated case. Kansas, Maryland, Connecticut, Virginia, and Pennsylvania have employed combinations of income and property as determinants of local fiscal capacity.

One question remains, how can income and property measures be equitably combined for ability determination? This question is especially germane in states not utilizing a personal income tax. Property ownership in a high income area would immediately assume a greater liability if state allocations and/or local requirements were based on income-property combinations of capacity measures.

In summary, the use of property valuations per pupil persist as the most common measure of the local ability to finance education for two indubitable reasons. Property provides in excess of 98 percent of the local support for school systems across the nation, and per pupil measures relate this wealth directly to need in a manner useful for state allocation plans.

#### Measures Based Upon Income Alone

Much discussion has been generated relative to the use of some form of income measure of fiscal capacity. Odden (1977) has raised the use of income in three contexts:

1. For jurisdictions that can levy income taxes, income is clearly an additional measure of fiscal capacity.

2. Regardless of the particular tax that is used, income is the best single indicator of fiscal capacity, and
3. Income, as an indicator of ability to pay links taxes raised to the burden placed on the community and its resources.

Availability of comparable data remains a logistic consideration for using personal income as a measure of capacity because personal income data represent the most comprehensive economic data now available annually on a state-by-state basis (ACIR, 1962). However, income data for jurisdictions smaller than state-wide is not as easily obtained and often must be prorated. This is especially true when analyzing data for school districts not coterminous with political subdivisions.

Even when used for interstate comparisons, gross personal income data have not met certain criteria of past research. Rationale for refinements have focused on the concept that gross personal income did not accurately reflect the per capita amount available for local taxation (Johns & Morphet, 1960).

According to Rossmiller (1972) federal income tax paid and a minimum living allowance are not available for local taxation and should be deducted from gross income to yield a more viable measure of relative local ability. As a

consequence, several net personal income measures have been developed for school finance study.

Johns and Hamilton (1970) deducted \$750 per capita for basic necessities and federal personal income tax paid from gross personal income to derive a measure of net personal income per capita. Using the same approach, the Educational Policy Commission of the National Education Association (1959) increased the base deduction to \$800 per capita. A 1977 school finance study conducted in West Virginia defined net personal income in the same manner as Johns and Hamilton.

Effective buying income (EBI) represents another gross income refinement that has received attention in the study of school finance as a measure of fiscal capacity. EBI per capita or per household represents the disposable personal income individuals or households have available to spend after subtracting all direct taxes—federal, state, and local (Our children's, 1977).

Each of these refinements represented reductions in income for federal tax paid. Federal tax data for these reductions were not always easy to obtain, however, and their necessity is questionable. The ACIR (1962) has pointed out that refinements of this type may not be warranted:

A fairly extensive study of federal tax withdrawals from personal income made in 1954 details the conceptual and measurement problems involved in adjusting for these withdrawals. This study,



as well as the work done by the Office of Business Economics on developing estimates of personal taxes by states, points to the conclusion that the relative position of the states is affected very little by an adjustment for federal tax withdrawals. (p. 15)

Alexander (Our children's, 1977) used gross personal income per capita, net personal income per capita, and effective buying income per capita in a 1977 school finance study of West Virginia. When compared with five adjacent states and the United States, West Virginia's rank changed one position regardless of the income measure used.

Some have proposed that income measures related more directly to the demand for education should be used to assess the capacity of states and units of local government to finance education. Johns and Morphet (1960) stated:

Obviously, the per capita income would not be a good measure of ability of the various states to support schools, even though it might constitute a measure of ability to support certain other governmental services. (p. 149)

Personal income per person age 5-17, personal income per child in average daily attendance, and personal income per child in average daily membership have been recommended ("Variations," 1971). These measures do reflect educational "burdens" more accurately than per capita measures and are sensitive to inter district pupil density variations.

Johns and Hamilton (1970) found that Tennessee ranked 44th among the states on the basis of gross personal income



per capita, net personal income per capita, and net personal income per capita as a percentage of personal income per capita. However, when income measures were changed to reflect educational "burden" Tennessee ranked 38th on personal income per school age child, 38th on personal income per child in ADA, and 41st on net income per child in ADA.

Hou (1975) found that among the 438 Illinois unit (K-12) districts, the City of Chicago ranked 4th in per ADA income, 47th in per capita income, and 92nd in median family income. Consideration given to introducing income weightings into a state aid formula should include results from investigation of the possible different effects of different income weightings.

Regardless of the particular income refinement selected, a basic question persists relative to the adoption of income as an element in capacity determination in states not levying a personal income tax. Should a base not available for local taxation be included in a measure of ability? This question must be answered before a rational selection of a methodology for capacity determination can be made. Pioneer research in school finance justified the inclusion of income ability in measures determining the fiscal capacity of localities only because of its availability for taxation at the local level. Commenting

on the selection of tax bases for building a composite ability index for the State of New York, Mort (1926) stated:

It (selection of tax bases) may be simplified first by eliminating theoretical ability to pay from consideration. We need only determine ability to pay under the tax system actually to be used. Since we must deal with communities which have no power over their tax systems except through state action, we cannot consider their ability as it would be under an ideal tax system. To build our system of state aid on such a foundation would throw excessive burdens upon the actual taxpayers in some communities, simply because there happened to be wealth in those communities that was not taxable under the existing system of taxation. (p. 16)

Odden (1977) has expressed the desirability of including measures of income regardless of its availability as a source of revenue and has stated, "Even when the property tax is still the only local tax, income may still be a more comprehensive and sensitive measure of fiscal capacity. Studies have shown that income is the single best explanatory variable of governmental expenditures" (p. 364). However, Odden did not claim income to be the best single explanatory variable of governmental expenditures for education. Research has shown little relationship between measures of income and per pupil expenditures.

Johns (1977) commented:

Odden confuses "fiscal capacity" with "fiscal capability." Including income in the measure of a district's contribution to the cost of its state assured program could easily result in requiring a district to levy property taxes in excess of its legal limits, if it does not have

the capability of levying local income taxes. (pp. 98-99)

Numerous studies have been conducted in an attempt to isolate socioeconomic variables related to effort for education. Kay, in a 1973 study of local tax effort in Kentucky, used multiple regression analysis to determine the relationship of 24 selected socioeconomic variables to local tax effort. When individual variables were correlated with tax effort, the most significant variable related to effort was the property tax base.

Sparkman (1977) studied the relationship between socioeconomic variables and state effort for education in all 50 states. Twenty-eight socioeconomic variables were analyzed with respect to their influence on each state's educational effort. Using two different measures of effort, the study could explain 38 and 32 percent of the variation in effort among the states. The factor associated with income measures in the analysis explained only 1 percent and 7 percent, respectively, of the variation in state effort for education. Rationalization for using income based on the relationship between income and effort cannot be justified on the basis of the literature reviewed.

In summary, justification for the use of income remains with its relationship to the ability to pay principal. Interstate capacity measures will likely continue to utilize some form of income data until such time as comparable

interstate data for other wealth measures become available. The use of income in states not taxing this source for education is questionable in the determination of local capacity for education support.

Tennessee does not levy a general personal income tax. The local retail sales and the property tax bases produced over 97 percent of the county revenue support for the financing of public school during the 1977 fiscal year. Research cited did not justify inclusion of measures of county personal income ability for the computation of measures of county fiscal capacity where this base was not available for local taxation. Generally, income measures have been included in capacity measures where

1. Income represented the only reliable data base for comparisons, and/or
2. Income taxation was available locally for support of programs of education.

Neither case applied to the State of Tennessee. A valid case has been built by past research for using

1. Bases for which valid measures are available, and
2. Bases which are available for local taxation.

These criteria indicate the selection of a combination of measures of local option sales tax and property ability to be a valid choice for the State of Tennessee.

### Uniform Tax Systems

The second major approach to the problem of measuring fiscal capacity evaluates tax bases available to a taxing jurisdiction, determines "appropriate" rates, and estimates the amount of revenue these bases would produce if subjected to the selected rates. A Model Tax System, Representative Tax System, and Average Financing Tax System are some of the more widely discussed methods of this type for determining the fiscal capacity and effort of state and local areas. Although these methods share a common approach, each differs in the rationale utilized for base and rate selection and/or determination.

The idea of a Model Tax Plan was developed by the National Tax Association in 1919. The plan selected bases and rates thought to produce taxpayer equity and adequacy of yield. Acceptance of Model Tax Plans for capacity determination dictated the assumption that an ideal procedure for raising taxes could be derived, an assumption not substantiated in the field of economics (Alkin, 1965). However, by 1935 Newcomer, in her work at Columbia, developed an index of taxpaying ability of state and local governments using a Model Tax Plan approach. While Newcomer assumed a uniform tax in all states, Chism (1936) modified the Model Tax Plan and applied it directly to each state in an effort to determine potential revenue available to finance public schools.

Implementation of tax-based models assumed state wealth or income to be available for support of education only insofar as it might be taxed through a "practical" system of taxation. Definitions of "practical" have been left to the discretion of researchers and/or policymakers. In 1962, the ACIR explored the possibility of using the Model Tax Plan approach in a nationwide study and concluded:

Views on the content of a model or ideal state-local tax system vary widely. No attempt has been made in recent years to crystalize them into a consensus . . . . Indeed, the concept of a model tax system has implications for public policy (but not necessarily for fiscal capacity measurement) purposes which may be at variance with the Commission's underlying philosophy that local conditions, preferences, and objectives are so varied among the 50 states as to preclude a single tax model appropriate for all the states. (p. 31)

Rather than inject policy decisions into the selection of an "ideal" tax system, the Commission selected a model based on prevailing tax practice across the country—or "Representative Tax System." The "Representative Tax System" was an average of the tax structures which actually existed in the States. ACIR members indicated that such a system reflected the politically accepted here and now. As such, comparisons of fiscal capacity measures were meaningful in terms of the kinds of taxes and tax rates politically available to the states.

A 1971 ACIR study of local fiscal capacity and effort refined the earlier "Representative Tax System" approach with the introduction of an "Average Financing System." Revenue capacity of a particular area was defined as, "the total amount of revenue that would result by applying to bases within the area, the national average rate of each of the numerous kinds of state-local revenue sources" (p. 7). Thus revenue potential was expanded beyond bases politically available within each state. Revenue potential of a state not taxing personal income included revenue from this source. These measures did not necessarily reflect the political here and now in each state as did the 1962 ACIR study. This procedure, in effect, weighted each revenue source according to its nationwide importance.

A third example of the Model Tax System approach has been calculated by Quindry (1978) in a series of reports on potential revenue prepared annually for the Southern Regional Education Board. Quindry applied national average tax rates to each of 15 bases. All of the tax bases used in the reports were not utilized by each state. Neither Quindry's nor the "Average Financing System" approach reflected actual practice in each state. A significant procedural difference in the Quindry methodology was the utilization of personal income as a proxy base for computing potential revenue from other tax bases including general sales. Personal income data were available annually



on an interstate basis and its use represented a viable estimation of the relative potential of other often non-unilaterally taxed bases. Quindry further refined his total revenue potential by including projected motor vehicle and motor fuel tax collections based on the number of motor vehicle registrations within a jurisdiction.

Due (1970), in a detailed discussion of alternative tax sources and/or utilization, developed tables demonstrating increased revenue potentials of the states. His technique made no recommendations relative to desirable tax mixes or rates. Rather his work afforded individual states the opportunity to examine their revenue potential in relation to the rest of the nation.

Significant differences to date in uniform tax system approaches have been the inclusion or exclusion of bases not taxed in all jurisdictions and the method of rate determination.

Development of uniform tax system approaches for capacity measurement allows the researcher flexibility in base and rate determination. Theoretically a uniform tax system can be designed to measure local ability to support education. Among the decisions necessary in designing any uniform tax system are the following:

1. Should bases be selected that are
  - a. legislatively available but not presently utilized?



- b. legislatively available and utilized?
- c. not legislatively available for taxation?
- 2. Should rates be determined by
  - a. dividing aggregate revenue by aggregate bases in area under study?
  - b. average rates in all areas under study?
  - c. a or b but using aggregates from areas larger than study area (e.g., nationwide rates for state or local studies)?
  - d. selecting some "practical" rate?
  - e. utilizing a "maximum" rate?

Given the choices outlined, it is apparent that the validity of the final capacity measure rests equally in the hands of policy decision and economic realism.

#### Development of Tennessee Capacity Measures

##### Early Attempts at Equity and Adequacy

The 1909 Session of the Tennessee Legislature formally established a General Education Fund to provide more adequately for the general education of Tennessee's scholastic population (Tennessee Public Acts of 1909, Section 3, Chapter 264). Until this time appropriations from the General Fund of Tennessee were made on a year-to-year basis. The General Education Fund as established in 1909 constituted 25 percent of the general revenue of the state.

As a part of the General Education Act of 1909, 10 percent of the General Education Fund was set aside as a "special fund" to be " . . . used and expended for the purpose of more nearly equalizing the common schools in the several counties of the State . . . ." This provision constituted a major step in Tennessee for equity and adequacy in education.

Participation in this special apportionment required a minimum local school tax of not less than 40 cents on each hundred dollars of taxable property, a tax of two dollars on each taxable poll, and local utilization of all legal privilege taxes for education. Allocation of the special fund to qualifying counties was made " . . . in proportion to their scholastic population and in inverse ratio to the taxable property of the several counties to scholastic population . . . " (Tennessee Public Acts of 1909, Section 3, Chapter 264).

"Equalizing," as used in the 1909 special fund provision, approached the present usage of the term by attempting to make available adequate funding to all common schools. Two basic elements of a modern funding mechanism were present in this historic Act: (1) required local effort and (2) allocations based on a measure of need and ability.

Capacity and effort were conceptualized in terms of property wealth per pupil in this initial attempt to fiscally equalize educational opportunities in the State of Tennessee. No formal recognition was given to the individual ability-to-pay principle.

Subsequent amendments (Tennessee Public Acts of 1913, Chapter 23; Tennessee Public Acts of 1915, Chapter 35) changed the amounts to be apportioned and/or local requirements. Basic reliance on property tax effort did not change. The policy of basing state allocations for educational purposes on property tax effort was established and has remained in some form through the present.

Steps taken by the 1917 Session of the Tennessee Legislature (Tennessee Public Acts of 1917, Section 2, Chapter 130) to set aside a portion of the General Education Fund as a "Special Equalizing Fund" had the purpose of aiding in and encouraging the lengthening of the short school terms in the counties until all the elementary school terms of the state contained a minimum of 140 days.

Local effort was encouraged by the requirements for participation in the equalizing apportionment. Amounts received by the county from the state were dependent on two dimensions: (1) the length of school term in the county and (2) the county school tax vote on each \$100.00 of taxable property.

Required effort was based on one revenue source—  
property.

#### First Comprehensive Equalization Plan

During the 1925 Legislative Session, Tennessee added another dimension based on local effort to the general plan for state financing of education. Flat grant per capita allocations based on local property tax effort became the basis for allocating 73 percent of the General State School Fund to the counties. Each county's portion of this allocation was determined as follows:

Five dollars (\$5.00) per capita, based upon the average daily attendance in the county and city public elementary schools of the state shall be distributed annually to each county that levies less than 30¢ for elementary schools; six dollars (\$6.00) for each county that levies for elementary schools not less than 30¢ and under 40¢; and seven dollars (\$7.00) for each county that levies for elementary schools 40¢ or more . . . .  
(Tennessee Public Acts of 1925, Section 17, Chapter 115)

The remainder of the General State School Fund was utilized as an equalizing fund to enable the various counties of the state to provide a minimum school term of eight months in the rural elementary schools. Enjoyment of the equalization clause was available to counties only after the following provisions were met and found to provide inadequate funding for the operation of eight-month elementary programs. Each county was required to levy and collect

(1) a tax of elementary schools of not less than fifty cents on each one hundred dollars of taxable property in the county, including any tax for elementary schools levied by the Legislature and retained in the county and excluding the State tax of eight cents for schools as provided in this Act, (2) a poll tax of one dollar (\$1.00), (3) all privilege taxes and fines allowed by law and that (4) complies with all other provisions of this Act . . . . (Tennessee Public Acts of 1925, Section 17, Chapter 115)

Revenues thus determined were added to the allocated seven dollars per capita. This sum was then subtracted from the amount required to operate a state defined minimum program to determine the equalization amount available to any county experiencing additional need.

The rationale for both the variable flat grant allocation and the equalization provision was based upon a required property tax effort. Effort as defined by this Act required a reasonable exercise of local ability. Ability was measured by property wealth.

Substantive change did not occur in the method of determining local ability and/or effort until following the 1945-47 survey of public education in Tennessee. As the effect of the 1925 plan had become better understood, property assessment had either been lowered or had not kept pace with true value (Public education, 1957).

In an effort to amend the inequities of improper and/or inadequate local assessment practices, the 1947 Legislature felt compelled to move toward a more equitable method for determining local property valuations. The

method for determining property valuations for each county as specified in the General Education Act of 1947 follows:

1. The locally assessed valuation of taxable property in each county in 1946 was adjusted to reflect equivalent valuations represented by payments-in-lieu of taxes made by the T.V.A. and other federal agencies.
2. The total true value of property in each county in 1946 was estimated by the State Board of Education.
3. An average of the two above quantities was computed for each county, and this average constituted the base for determining the local contribution. (Tennessee Public Acts of 1947, Section 8, Chapter 8)

This method determined property valuations by averaging inequitable local assessments with estimated property values made by the State Board of Education. Additionally, a guarantee provision was enacted to insure that no county would be required to contribute more than it raised for public school purposes in the 1945-46 school year.

Property was retained as the ability indicator for capacity determination although problems with obtaining valid local assessments on a state-wide basis were becoming obvious. The methodology employed by the 1947 Legislature constituted a first step in the solution of this problem.

#### Implementation of the Index of Taxpaying Ability

Property remained the single base for measuring local ability until the 1955 Session of the State Legislature adopted an "index of taxpaying ability" (Tennessee Public

Acts of 1955, Section 5, Chapter 136). Criticism had steadily mounted relative to certain inequities inherent in the 1947 index of ability. In a report to the Education Survey Subcommittee of the Tennessee Legislative Council (Public education, 1957), the following comments were made:

In addition to the inequities inherent in the guarantee provisions there was no basis for adjusting the 1947 index to reflect population changes, construction of new residences and manufacturing plants, and other factors affecting the relative taxpaying ability of the counties. (p. 440)

Gibbs (Public education, 1957), in his work to provide a more equitable method for obtaining valid property data, employed a procedure utilizing multiple regression techniques to predict relative property values for the 95 counties of Tennessee. This procedure, pioneered by Johns, had been implemented in Georgia, Alabama, and Mississippi prior to 1955 (Johns & Morphet, 1960).

Simply stated, the procedure regressed certain economic factors on property values obtained from sales ratio studies conducted by the railroads operating in Tennessee. The multiple regression technique produced the following equation:

Index of Taxpaying Ability =

.105 (county percent of the state total  
motor vehicle registration payments  
for the three most recent years) +



- .069 (county percent of the state total  
farm products sold) +
- .139 (county percent of the total number of  
gainfully employed non-governmental  
workers in the state) +
- .690 (county percent of the state total  
retail sales tax collections for the  
three most recent years)

(Tennessee Public Acts of 1955,  
Section 5, Chapter 136)

Misunderstanding as to what was being measured and how it was measured surrounded the procedure. Criticism focused on its heavy reliance on sales tax collections. The basic contention was that often a purchaser paid his sales tax in one county ". . . while his taxable real estate was located in another county and, as a result, property taxpaying ability in cities and towns was unduly exaggerated" ("Public Education," 1957, p. 442). The validity of this criticism was dispelled by a comparison between the index of taxpaying ability and an equalized property valuation index for 20 counties. Comparison indicated the index of taxpaying ability to be an accurate estimate of the taxpaying ability of the large metropolitan counties ("Public Education," 1957).

The economic index of taxpaying ability was not intended to supplant reliance on property wealth in the State Minimum Foundation Plan. Instead, the "index" furnished a surrogate measure of each county's percent of the total



estimated true value of taxable property in the state.

A 1957 survey of public education in Tennessee indicated that if and when " . . . a satisfactory plan was developed for equalizing property valuations among counties, the actual equalized assessed valuation of taxable property in each county could be used to determine the local contribution of the state minimum school program" ( Public education, 1957, p. 442).

#### Tennessee Educational Finance Act of 1977

In an attempt to implement a funding mechanism that better met the individual needs of students across the state, the 1977 Session of the Tennessee Legislature passed into law the Tennessee Educational Finance Act of 1977. As a part of the Act, a new method for measuring the fiscal capacity of the 95 counties was implemented. After a period of 22 years, the "index of taxpaying ability" was replaced by a new method of determining the local ability for financing programs of education (Tennessee Public Acts of 1977, Section 6, Chapter 289). Implementation of this procedure was made possible by certain court litigation initiated in the Federal Court by the L & N Railroad Company and in the State Court by the Southern Railway System ( Legislation relating, 1967).

The L & N and Southern Railways had sought relief through the State and Federal Court Systems claiming unfair discrimination relative to the different assessment ratios employed with respect to public utilities and residential properties. The courts in granting relief commented with respect both to the unconstitutionality aspects involved and to the facts uncovered by sales ratio studies conducted to facilitate proceedings (Legislation relating, 1967).

The state, in an attempt to remedy the inequities precipitated by the condition of property assessments, appointed a tax study commission to conduct a study of all phases of the problem and recommend remedial action (Legislation relating, 1967). As a result of the work of the study commission, four bills relating to the tax problem were enacted by the Legislature. Chapter 326, Tennessee Public Acts of 1967, established a procedure whereby a state-wide reappraisal and tax revaluation program was undertaken.

Originally, the total state reappraisal of property was to have been completed by 1973. As of the fall of 1977, all counties in Tennessee except Monroe, Carter, and Johnson had completed the state-wide reappraisal program begun in 1967 (Annual survey, 1977).

As an outgrowth of state interest in tax equity the 1972 Session of the State Legislature (Tennessee Public Acts of 1972, Chapter 746) created a Tax Modernization and Reform Commission. One major area of study included alternative methods of financing public school systems.

As a part of the final recommendations made by the Tax Modernization and Reform Commission, a section was devoted to state-local funding of education (Sharing of state, 1974). Local ability was once again placed in the hands of equalized assessments of property. Recommendation was made that each county would be required to provide annually as its local share of the minimum foundation program an amount equal to the value of a tax rate determined by (state aggregate amount of local contribution/95 percent of state aggregate property assessment) (Sharing of state, 1974).

While final action on the local share measure retained the basic reliance on equalized property assessments, the methodology for determining each county's "adjusted property value" was changed to read as follows:

- (1) Obtain the most recent payments in lieu of taxes paid by the Tennessee Valley Authority directly to individual counties and to the state for distribution to individual counties as are available on March 1. The total amount of such payments received by each county shall be converted to an equivalent amount of assessed peroperty value by using the current individual

county tax rate available on March 1. Where multiple county tax rates exist, the highest rate shall be used.

(2) Obtain the total assessed valuation for the county from the most recent Tax Aggregate Report of Tennessee by the State Board of Equalization as is available on March 1 each year.

(3) The adjusted county property value shall be the sum of the total assessed valuation of the county and the county property equivalent of TVA payments in lieu of taxes as calculated in subsection one (1) above. (Tennessee Public Acts of 1977, Section 6, Chapter 289)

Each county's local share in the basic minimum program as well as local fiscal responsibility in capital outlay was based on this property measure.

#### Summary

The first section of this chapter provided a survey of developments of the various approaches to measures of fiscal capacity. Section two was devoted to a summary tracing measures of fiscal capacity in Tennessee. Rationale employed by Tennessee did not appear incongruent with general developments of rationale employed in previous research.

One fundamental choice made by previous researchers focused on the use of only those tax bases available for taxation. The 1962 ACIR study indicated that this decision allowed the capacity measures to represent the political here and now.

The selection of property wealth for capacity determination in Tennessee represented a natural choice since historically property has represented the bulk of local support for education in the state. This choice held counties accountable for a degree of effort from the base available to them. Tennesseans have viewed this requirement as an equitable one since 1909. Even during the period (1955-1977) when Tennessee turned to the "economic index" approach, property wealth remained the standard of comparison for relative county ability to support education.

One variable, however, has gained fiscal significance in the local funding of education without gaining formal recognition in the State Educational Finance Act of 1977 or any previous act. The local option sales tax has, since its adoption in 1963, assumed a position second only to property in supplying local funds for programs of education. As of fiscal year 1977, local sales tax yields supplied \$112,721,281 or 33 percent of county revenue receipts for the current operation and maintenance of programs of education (Annual survey, 1977).

Tennessee has demonstrated a history of determining local capacity based on taxes available to support educational programs. Inclusion of measures of tax bases not available for local taxation contradicts the principal

established by this rationale. Revenue from a general personal income tax is not now available in Tennessee. Early state programs cited (1909, 1917, and 1925) included yields from the poll tax and other privilege taxes available locally even though these sources represented only a fraction of the property yields. The exclusion of local sales tax ability which supplied 33 percent of the local revenue for education in fiscal year 1977 is a violation of this basic rationale employed since 1909.

How may property and sales tax ability be equitably combined for local capacity determination in Tennessee? One major purpose of this study was to present a methodology for doing this and to show it was not in violation of the basic rationale historically used in Tennessee. The method developed and employed was also in keeping with the best rationale utilized in previous capacity studies.

### CHAPTER III

#### PRESENTATION AND DISCUSSION OF THE DATA

The purpose of this chapter is to present and discuss the data necessary to analyze the relationships posed in Questions 1-6. Nine formulae were presented in the Procedures section of Chapter I for the purpose of developing measures for use in this study from the raw data obtained from the Tennessee State Board of Equalization, State Department of Revenue, and State Department of Education. These measures comprise the data presented and discussed.

This chapter is divided into two principal sections. Section one presents and discusses county fiscal capacity data. Two measures of fiscal capacity are provided for both the county retail sales and county property bases. The discussion of county fiscal capacity data is supplemented by a tabular presentation of county measures derived by Formulae 1-6.

Section two presents and discusses county effort data. Three sets of effort indices are developed. Effort indices based on local retail sales ability, property wealth, and a

weighted average of retail sales and property ability were calculated by utilizing Formulae 7-9. A tabular presentation of the three sets of effort indices is provided.

Raw data used for developing measures of capacity and effort are presented in the Appendix section of the study.

### Measures of County Fiscal Capacity

#### County Adjusted Property Valuations

The Tennessee Education Finance Act of 1977, Section 6, specified the method whereby the required local county share was computed for participation in the Tennessee Minimum Foundation Program. Local requirement was based solely on an equalized assessed property valuation adjusted to reflect two payments made annually to the counties in lieu of property taxes by the Tennessee Valley Authority.

Total equalized assessed property valuation in Tennessee as reported by the State Board of Equalization for the 1976 fiscal year was \$11,407,723,071. This figure represented a 4.8 percent increase over the 1975 assessment.

Tennessee Valley Authority payments made directly to the counties totaled \$946,631. This amount increased less than 1/10 of 1 percent over the 1975 payment. Tennessee Valley Authority payments to the counties disbursed by the state totaled \$3,024,747, an increase of 27.7 percent over the 1975 fiscal year payment.



Equivalent property values for each county were computed from the Tennessee Valley payments by dividing the total of each county's payments by the 1976 county property tax rate. The property rate was available annually March 1. Where multiple county tax rates existed, the highest rate was used (see Chapter II of this study, Section 6(a)(1), Tennessee Education Finance Act of 1977). Each county's equivalent property value was then added to the county assessed valuation to determine the county adjusted property valuation. The state total county equivalent property value was \$11,553,632 for fiscal year 1976. The Tennessee adjusted property valuation totaled \$11,519,276,703 for the 1976 fiscal year. Complete county adjusted property valuation data is listed in the Appendix of this study.

Each county's adjusted property valuation was expressed as a percent of the state adjusted property valuation. The county values ranged from a high of 19.559 percent in Shelby County to a low of .050 percent in Hancock County. Shelby, Davidson, Hamilton, and Knox counties contained percentages of 19.559, 14.897, 7.560, and 6.394, respectively, for a total of 48.410 percent of the state adjusted property value. Table 2 lists adjusted property valuation percentages for each county.

County Potential Property  
Tax Yields/ADA

County PPTY/ADA were computed using Formula 1. PPTY/ADA data represented each county's potential yield from the county adjusted property valuation if the state fiscal average property tax rate were levied. The state fiscal average property rate for education was 1.912 dollars per hundred dollars of assessed valuation during the 1977 fiscal year. PPTY/ADA data were a function of adjusted property valuations/ADA and the state fiscal average usage of this base for education.

A 1977 fiscal year state total of \$220,304,980 in revenue for education was collected in the counties from school taxes current year, school taxes prior year, pick-up school taxes, interest and penalty on delinquent school taxes, and payments in lieu of county taxes. This figure represented 64.6 percent of the state total county 1977 fiscal year revenue receipts for education. Individual county PPTY/ADA ranged \$413.68/ADA from a high of \$495.29/ADA in Polk County to a low of \$81.61/ADA in Hancock County, a ratio of 6:1. The state average PPTY/ADA was \$213.69. Table 1 lists PPTY/ADA data for each county.

County Adjusted Local Option  
Sales Tax Ability

Formula 2 was used to compute each county's percent of the state retail sales base. Retail sales were taxed

TABLE 1

Actual and Potential County Revenue for the  
Support of Programs of Education

County	Property Revenue		Local Option Sales Tax Revenue	
	Actual <sup>a</sup> /ADA	PPTY/ADA	Actual <sup>a</sup> /ADA	PSTY/ADA
Anderson	\$307.51	\$137.07	\$ 3.66	\$123.25
Bedford	210.90	301.25	66.98	127.69
Benton	196.56	151.05	41.32	91.92
Bledsoe	171.36	166.40	26.60	45.84
Blount	220.88	292.35	105.16	125.59
Bradley	201.75	257.12	109.95	121.58
Campbell	207.38	119.95	0.00	91.84
Cannon	161.42	411.38	39.48	76.51
Carroll	171.81	146.06	41.97	83.01
Carter	199.42	131.32	54.18	75.98
Cheatham	160.83	143.86	57.22	53.22
Chester	56.12	163.31	47.88	81.44
Claiborne	184.55	117.09	80.64	65.00
Clay	176.95	131.40	30.95	55.76
Cocke	174.09	173.80	64.63	88.88
Coffee	124.96	176.09	59.36	126.74
Crockett	125.72	189.58	47.16	54.19
Cumberland	241.96	261.13	56.06	89.09
Davidson	481.69	461.04	350.99	255.83
Decatur	161.93	179.72	79.03	91.98
DeKalb	215.67	172.64	30.24	88.90
Dickson	173.30	160.81	121.31	94.76
Dyer	74.55	271.89	112.32	120.99
Fayette	101.91	206.70	37.31	45.67
Fentress	140.45	162.57	0.00	68.32

TABLE 1 (continued)

County	Property Revenue		Local Option Sales Tax Revenue	
	Actual <sup>a</sup> /ADA	PPTY/ADA	Actual <sup>a</sup> /ADA	PSTY/ADA
Franklin	188.94	173.49	49.81	87.99
Gibson	162.09	202.99	79.66	102.66
Giles	416.41	213.83	83.09	96.19
Grainger	119.02	145.74	21.81	38.23
Greene	217.51	223.56	80.80	92.28
Grundy	166.93	108.03	73.34	57.59
Hamblen	211.50	266.48	134.01	38.28
Hamilton	443.89	359.55	196.16	194.26
Hancock	91.49	81.61	21.06	33.44
Hardeman	172.46	173.27	58.63	66.05
Hardin	173.02	213.36	60.16	107.78
Hawkins	242.94	166.41	32.14	61.37
Haywood	160.59	240.74	56.56	81.25
Henderson	202.64	132.33	38.13	92.78
Henry	272.13	240.45	72.51	126.04
Hickman	315.38	261.77	0.00	77.65
Houston	143.38	152.70	47.64	36.01
Humphreys	232.87	395.26	94.94	100.08
Jackson	175.94	173.08	29.34	52.28
Jefferson	230.98	213.25	78.27	72.23
Johnson	321.95	193.18	0.00	74.71
Knox	236.97	255.54	292.73	185.17
Lake	161.63	205.59	63.49	85.67
Lauderdale	138.84	155.61	39.27	74.63
Lawrence	160.29	155.62	96.14	93.82
Lewis	166.06	204.61	0.00	75.93
Lincoln	175.55	212.27	80.66	86.18

TABLE 1 (continued)

County	Property Revenue		Local Option Sales Tax Revenue	
	Actual <sup>a</sup> /ADA	PPTY/ADA	Actual <sup>a</sup> /ADA	PSTY/ADA
Loudon	\$277.83	\$164.87	\$ 82.54	\$ 90.05
McMinn	286.44	210.20	61.61	111.24
McNairy	225.48	207.77	0.00	70.98
Macon	186.38	290.85	74.05	93.34
Madison	110.46	233.43	145.55	160.06
Marion	244.07	152.61	54.84	96.38
Marshall	300.72	221.12	113.92	99.44
Maury	195.45	246.75	139.03	127.00
Meigs	163.86	247.21	23.89	109.09
Monroe	169.82	149.05	89.90	98.31
Montgomery	152.21	163.83	209.39	127.36
Moore	296.27	324.01	0.00	39.57
Morgan	255.93	170.69	0.00	38.32
Obion	143.16	246.88	99.54	115.16
Overton	140.64	151.91	74.44	70.77
Perry	282.15	264.83	19.50	60.22
Pickett	93.54	185.41	61.98	67.14
Polk	528.78	495.29	76.07	103.06
Putnam	237.15	264.24	72.32	130.62
Rhea	304.15	222.19	44.88	87.54
Roane	163.54	256.23	83.12	164.86
Robertson	199.41	160.92	110.53	81.53
Rutherford	237.25	257.04	111.80	118.94
Scott	199.40	153.89	0.00	77.98
Sequatchie	138.07	150.49	101.43	70.14
Sevier	279.95	249.74	165.25	166.22
Shelby	319.08	334.91	158.35	174.10
Smith	199.18	228.89	47.35	97.93

TABLE 1 (continued)

County	Property Revenue		Local Option Sales Tax Revenue	
	Actual <sup>a</sup> /ADA	PPTY/ADA	Actual <sup>a</sup> /ADA	PSTY/ADA
Stewart	\$218.57	\$261.20	\$ 68.20	\$ 59.89
Sullivan	400.53	388.53	125.57	144.33
Sumner	316.14	239.80	52.50	75.52
Tipton	133.23	156.48	38.02	68.31
Trousdale	208.50	324.60	26.43	116.69
Unicoi	206.18	160.77	0.00	72.14
Union	219.99	123.98	41.13	48.41
Van Buren	127.06	154.96	40.72	32.61
Warren	123.27	171.36	182.18	113.37
Washington	188.06	234.24	113.76	137.10
Wayne	160.62	192.93	32.71	63.92
Weakley	163.99	211.69	56.26	100.23
White	123.36	161.82	24.42	89.56
Williamson	329.19	260.81	70.18	79.19
Wilson	178.83	245.95	73.30	79.41

<sup>a</sup>Actual property revenue/ADA and actual local option sales tax revenue/ADA were derived from data reported in the 1977 Annual Statistical Report of the Tennessee Department of Education.

by the state at a 4.5 percent rate during the 1976 and 1977 fiscal years. Therefore, each county's collections expressed as a percent of the total state collection yielded the percentage of retail sales available to each county for local option sales taxation. Adjusted local option sales tax ability data computed in this manner were analogous to the concept of property wealth expressed by county adjusted property wealth data.

The percentage of county adjusted local option sales tax ability ranged from a high of 19.804 in Shelby County to a low of .026 in Van Buren County. Shelby, Davidson, Hamilton, and Knox Counties contained percentages of 19.804, 16.152, 7.981, and 9.052, respectively, for a total of 52.989 percent of the total state local option sales tax ability. Table 2 lists adjusted local option sales tax ability percentages for each county.

County Potential Sales  
Tax Yields/ADA

Formula 3 was used to compute individual county PSTY/ADA. PSTY/ADA data represented each county's potential yield from the county local option sales tax base if the state fiscal average local option sales tax rate were levied. The state fiscal average local option sales tax rate for education during the 1977 fiscal year was .957. During fiscal year 1977, a state-wide county total of \$112,721,281 in revenue receipts for the current operation

TABLE 2

Wealth Indices Based on the Rationale Employed by the  
Tennessee Education Finance Act of 1977

County	Adjusted property valuations as a percent of the state total	Adjusted local option sales tax wealth	Combined index <sup>a</sup>
Anderson	.876	1.539	1.100
Bedford	.714	.591	.672
Benton	.189	.224	.201
Bledsoe	.134	.072	.113
Blount	1.901	1.595	1.797
Bradley	1.480	1.367	1.442
Campbell	.405	.605	.473
Cannon	.342	.124	.268
Carroll	.382	.425	.397
Carter	.560	.633	.585
Cheatham	.294	.213	.267
Chester	.170	.165	.168
Claiborne	.280	.303	.288
Clay	.088	.073	.083
Cocke	.455	.454	.455
Coffee	.633	.891	.720
Crockett	.297	.166	.253
Cumberland	.653	.435	.579
Davidson	14.897	16.152	15.322
Decatur	.159	.159	.159
DeKalb	.189	.190	.189
Dickson	.436	.502	.458
Dyer	.857	.745	.819
Fayette	.517	.223	.417



TABLE 2 (continued)

County	Adjusted property valuations as a percent of the state total	Adjusted local option sales tax wealth	Combined index <sup>a</sup>
Fentress	.203	.167	.191
Franklin	.463	.459	.462
Gibson	.928	.917	.924
Giles	.451	.397	.433
Grainger	.207	.106	.173
Greene	1.039	.838	.971
Grundy	.128	.134	.130
Hamblen	1.169	1.185	1.174
Hamilton	7.560	7.981	7.702
Hancock	.050	.040	.047
Hardeman	.417	.311	.381
Hardin	.412	.406	.410
Hawkins	.604	.435	.547
Haywood	.503	.332	.445
Henderson	.245	.335	.275
Henry	.544	.557	.548
Hickman	.331	.192	.284
Houston	.097	.045	.079
Humphreys	.612	.303	.507
Jackson	.131	.078	.113
Jefferson	.558	.369	.494
Johnson	.221	.167	.203
Knox	6.394	9.052	7.294
Lake	.156	.127	.146
Lauderdale	.375	.351	.367
Lawrence	.474	.559	.503
Lewis	.151	.109	.137

TABLE 2 (continued)

County	Adjusted property valuations as a percent of the state total	Adjusted local option sales tax wealth	Combined index <sup>a</sup>
Lincoln	.533	.422	.495
Loudon	.404	.432	.413
McMinn	.802	.829	.811
McNairy	.409	.273	.363
Macon	.342	.215	.299
Madison	1.444	1.935	1.610
Marion	.345	.425	.372
Marshall	.352	.310	.338
Maury	1.106	1.112	1.108
Meigs	.170	.146	.162
Monroe	.336	.434	.369
Montgomery	1.088	1.652	1.279
Moore	.124	.030	.092
Morgan	.269	.118	.218
Obion	.769	.701	.746
Overton	.234	.213	.227
Perry	.133	.059	.108
Pickett	.063	.045	.057
Polk	.611	.248	.488
Putnam	.913	.881	.902
Rhea	.443	.341	.408
Roane	1.006	1.265	1.094
Robertson	.516	.510	.514
Rutherford	1.733	1.567	1.677
Scott	.298	.295	.297
Sequatchie	.121	.110	.117
Sevier	.773	1.005	.852

TABLE 2 (continued)

County	Adjusted property valuations as a percent of the state total	Adjusted local option sales tax wealth	Combined index <sup>a</sup>
Shelby	19.498	19.804	19.602
Smith	.280	.234	.264
Stewart	.192	.086	.156
Sullivan	4.957	3.598	4.497
Sumner	1.803	1.109	1.568
Tipton	.509	.434	.484
Trousdale	.153	.108	.138
Unicoi	.209	.209	.209
Union	.122	.093	.112
Van Buren	.062	.026	.050
Warren	.486	.628	.534
Washington	1.665	1.904	1.746
Wayne	.257	.166	.226
Weakley	.526	.487	.513
White	.274	.296	.281
Williamson	1.200	.712	1.035
Wilson	1.143	.721	1.000

<sup>a</sup>The combined index was calculated as a weighted average of Columns 1 and 2. Weights were determined by the state fiscal average county usage of property and sale tax bases for the support of education during the 1977 fiscal year.

of programs of education were collected and disbursed from the local option sales tax base. This figure represented 33.0 percent of the total county 1977 fiscal year revenue receipts for education. Table 1 shows a PSTY/ADA range of \$255.83/ADA, from a high of \$223.22/ADA in Davidson County to a low of \$32.61/ADA in Van Buren County, a ratio of almost 8:1. The state average PSTY/ADA was \$92.12.

Combined Property and Local  
Option Sales Tax Ability

Formulae 4, 5, and 6 were used to compute measures of wealth based on a functional relationship between county property wealth, county local option sales tax ability, and the relative use of both by counties to support programs of public education. County revenue from these two sources comprised 97.6 percent of all county revenues for current operation and maintenance during the 1977 fiscal year.

Using fiscal year 1977 data, the Formula 4 used to calculate each county's combined wealth index became

$$\frac{64.588 \left( \begin{array}{l} \text{County A percent of} \\ \text{state retail sales base} \end{array} \right) + 33.047 \left( \begin{array}{l} \text{County A percent of state} \\ \text{adjusted property valuation} \end{array} \right)}{97.635}$$

Combined wealth index data for each county are listed in Table 2. County values ranged from a high of 19.602 in

Shelby County to a low of .047 in Hancock County. Shelby, Davidson, Hamilton, and Knox counties contained percentages of 19.602, 15.322, 7.702, and 7.294, respectively, for a total of 49.920 percent of the total state combined property and local option sales tax ability.

#### Measures of County Effort

Three sets of effort indices were developed for this study. Formulae 7, 8, and 9 in the Procedures section of Chapter I give the mathematical derivation of each.

The first index was based on property effort; the second index, local option sales tax effort; and the third index on a weighted average of both. Effort indices are displayed in Table 3.

#### County Property Wealth Effort Indices

A property wealth effort index was calculated for each county by utilizing Formula 7. Each county's property revenue for the current operation and maintenance of programs of education was expressed as a percent of that county's PPTY. An index of 100.0 indicated a county was making the state fiscal average effort from the property base.

County property wealth effort indices ranged from a high of 224.4 in Anderson County to a low of 27.4 in Dyer County. The mean county effort index based upon property wealth was 96.2. This meant that the average county was

TABLE 3

Individual County Effort Indices for the  
Support of Programs of Education

County	Property effort indices	Retail sales tax effort indices	Combined property sales tax effort indices
Anderson	224.4	3.0	119.5
Bedford	70.0	52.5	64.8
Benton	130.1	45.0	97.9
Bledsoe	103.0	58.0	93.3
Blount	75.6	83.7	78.0
Bradley	78.4	90.4	82.3
Campbell	172.9	0	97.9
Cannon	39.2	51.6	41.2
Carroll	117.6	50.6	93.3
Carter	151.9	71.3	122.3
Cheatham	111.8	107.5	110.6
Chester	34.4	58.8	42.5
Claiborne	157.6	124.1	145.6
Clay	134.7	55.5	111.1
Cocke	100.2	72.7	90.9
Coffee	71.0	46.8	60.9
Crockett	66.3	87.0	70.9
Cumberland	92.7	62.9	85.1
Davidson	104.5	137.2	116.2
Decatur	90.1	85.9	88.7
DeKalb	124.9	34.0	94.0
Dickson	107.8	128.0	115.3
Dyer	27.4	92.8	47.6
Fayette	49.3	81.7	55.2
Fentress	86.4	0	60.8

TABLE 3 (continued)

County	Property effort indices	Retail sales tax effort indices	Combined property sales tax effort indices
Franklin	108.9	56.6	91.3
Gibson	79.9	77.6	79.1
Giles	194.7	86.4	161.1
Grainger	81.7	57.1	76.5
Greene	97.3	87.6	94.4
Grundy	154.5	127.4	145.1
Hamblen	79.4	96.9	85.4
Hamilton	123.5	101.0	115.6
Hancock	112.1	63.0	97.8
Hardeman	99.5	88.8	96.6
Hardin	81.1	55.8	72.6
Hawkins	146.0	52.4	120.8
Haywood	66.7	69.6	67.4
Henderson	153.1	41.1	107.0
Henry	113.2	57.5	94.0
Hickman	120.5	0	92.9
Houston	93.9	132.3	101.2
Humphreys	58.9	30.5	66.2
Jackson	101.7	56.1	91.1
Jefferson	108.3	108.4	108.3
Johnson	166.7	0	120.2
Knox	92.7	158.1	120.2
Lake	78.6	74.1	77.3
Lauderdale	89.2	52.6	77.4
Lawrence	103.0	102.5	102.8
Lewis	81.2	0	59.2
Lincoln	82.7	93.6	85.8

TABLE 3 (continued)

County	Property effort indices	Retail sales tax effort indices	Combined property sales tax effort indices
Loudon	168.5	91.7	141.4
McMinn	136.3	55.4	108.3
McNairy	108.5	0	80.9
Macon	64.1	79.3	67.8
Madison	47.3	90.9	65.1
Marion	159.9	56.9	120.1
Marshall	136.0	114.6	129.3
Maury	79.2	109.5	89.5
Meigs	66.3	21.9	52.7
Monroe	113.9	91.3	105.0
Montgomery	92.9	164.4	124.2
Moore	91.4	0	81.5
Morgan	149.9	0	122.0
Obion	58.0	86.4	67.0
Overton	92.6	105.2	96.6
Perry	106.5	32.4	92.8
Pickett	50.5	92.3	61.6
Polk	106.8	73.8	101.1
Putnam	89.7	55.4	78.4
Rhea	136.9	51.3	112.7
Roane	63.8	50.4	58.6
Robertson	123.9	135.6	127.8
Rutherford	92.3	94.0	92.8
Scott	129.6	0	86.0
Sequatchie	91.8	144.6	108.6
Sevier	112.1	99.4	107.0



TABLE 3 (continued)

County	Property effort indices	Retail sales tax effort indices	Combined property sales tax effort indices
Shelby	95.3	91.0	93.8
Smith	87.0	48.4	75.4
Stewart	83.7	113.9	89.3
Sullivan	103.1	87.0	98.7
Sumner	131.8	69.5	116.9
Tipton	85.1	55.7	76.2
Trousdale	64.2	22.7	53.2
Unicoi	146.5	9	96.8
Union	177.4	85.0	151.5
Van Buren	82.0	124.9	89.5
Warren	71.9	160.7	107.3
Washington	80.3	83.0	81.3
Wayne	83.3	51.2	75.3
Weakley	77.5	56.1	70.6
White	76.2	27.3	58.8
Williamson	126.2	88.6	117.5
Wilson	72.7	92.3	77.5

exercising 96.2 percent of its projected property tax yield capacity for the current operation and maintenance of programs of education.

#### County Local Option Sales Tax Effort Indices

A local option sales tax effort index was calculated for each county by utilizing Formula 8. Each county's local option sales tax revenue for the current operation and maintenance of programs of education was expressed as a percent of that county's PSTY. An index of 100.0 indicated a county was making the state fiscal average effort from the county retail sales base.

County local option sales tax effort indices ranged from a high of 164.4 in Montgomery County to a low of 0.0 in Campbell, Fentress, Hickman, Johnson, Lewis, McNairy, Moore, Morgan, Scott, and Unicoi Counties. The mean county effort index based upon local retail sales ability was 67.6. This meant that the average county was utilizing 67.6 percent of its potential local option sales tax yield capacity for the current operation and maintenance of programs of education.

#### County Combined Ability Effort Indices

A combined ability effort index was calculated for each county by utilizing Formula 9. The sum of each county's local option sales tax and property tax revenue for the current operation and maintenance of programs of

education was expressed as a percent of the sum of each county's PPTY and PSTY. This index reflected relative effort made from each wealth base. The sum of county revenue receipts from the property and retail sales bases captured 97.6 percent of all county revenue receipts for the current operation and maintenance of programs of education during the 1977 fiscal year.

Effort indices based on measures of combined ability ranged from a high of 161.1 in Giles County to a low of 41.2 in Cannon County. Davidson, Hamilton, Knox, and Shelby counties had combined effort indices of 116.2, 115.6, 120.2, and 93.8, respectively. The mean county combined wealth effort index was 88.0. This meant that the average county was utilizing 88.0 percent of its potential total local option sales tax and property tax yields capacity for the current operation and maintenance of programs of education.

As an example, Grainger County raised \$440,366 from the local option sales and property tax bases for education during the 1977 fiscal year. If Grainger County had levied the state fiscal average rates on these two bases, a combined yield of \$575,274 would have been realized. Expressing the actual yield as a percent of the potential yield resulted in a combined effort index of 76.5. This meant Grainger County was exercising 76.5 percent of its projected capacity from the local option sales and property tax bases.

## CHAPTER IV

### FINDINGS

The purpose of this chapter is to report the findings of the analysis of the relationships between measures of local option sales tax ability and county fiscal capacity and effort to support programs of public education.

Chapter I provided a detailed discussion of the procedures used in this analysis. Specific formulae were presented which were utilized in the development of measures needed to examine the relationships posed in Questions 1-6.

Chapter II provided a review of literature. The review was divided into two principal parts. Part one traced the development of fiscal capacity measures with a particular emphasis on the rationale employed. Part two traced the history of fiscal capacity measures and required local effort for the local support of programs of education in the State of Tennessee.

Chapter III applied Formulae 1-9 to the raw data to generate measures of capacity and effort needed to test null hypotheses 1-8. County measures were presented in tabular form to supplement the discussion provided.

This chapter is divided into two principal sections. Section one examines the relationships between measures of county sales tax ability and county fiscal capacity. Computed correlations are discussed, analyzing the strengths and characteristics of the relationships between data appropriate in the testing of null hypotheses 1-4.

Section two examines the relationships between measures of county sales tax ability and measures of county effort to support education. Computed correlations are discussed analyzing the strengths and characteristics of the relationships between data appropriate in the testing of null hypotheses 5-8.

Relationship Between Measures of Local Option  
Sales Tax Ability and County Fiscal Capacity  
to Support Programs of Education

To further clarify the problem studied, two questions were investigated to examine the relationship between measures of local sales tax ability and measures of capacity:

Question 1. To what extent were measures of fiscal capacity based on county local option sales tax ability related to measures of capacity based on county property wealth?

Question 2. To what extent were measures of capacity based on property wealth alone related to combined capacity indices based on property and local option sales tax ability?

Two measures of ability were developed for analysis of the relationships posed in Questions 1 and 2. Firstly, measures of county local option sales tax ability were developed using Formula 2 and were designated county adjusted local option sales tax ability. County adjusted local option sales tax ability represented each county's state retail sales collections for the 1976 fiscal year as a percentage of the total state retail sales tax collections. These percentages represented the county relative sales tax base available for local option sales taxation. Measures of county property wealth were developed utilizing the methodology specified in the Tennessee Education Finance Act of 1977 and were designated county adjusted property values. Adjusted property valuations were expressed as a percentage of the state total adjusted property value. These percentages represented the county relative property base available for support of education. County adjusted local option sales tax ability and percentages of adjusted property valuation thus determined represented parallel measures of capacity.

Secondly, measures of county local option sales tax ability were developed using Formula 3 and were designated PSTY/ADA. PSTY/ADA represented each county's potential yield/ADA from the retail sales base if the state fiscal average rate were levied. Measures of county property

wealth were computed utilizing Formula 1 and were designated PPTY/ADA. PPTY/ADA represented each county's potential yield/ADA from the property base if the state fiscal average rate were levied. PSTY/ADA and PPTY/ADA calculated in this manner represented a second set of parallel measures of capacity.

Relationship Between County Adjusted  
Local Option Sales Tax Ability and  
County Adjusted Property Values

The relationship between adjusted local option sales tax ability and adjusted property valuations was examined by employing the rank order correlation coefficient method. A correlation coefficient of +.995 was computed. The test of significance indicated that the relation was significant at both the .05 and .01 levels of significance. Null hypothesis 1 was rejected at both levels.

Examination of Table 2 reveals the strong positive relationship between data in Columns 2 and 3. The value of the correlation was not unexpected since these data represented the "fiscal size" of counties and not their relative wealth on a per pupil measure as did PPTY/ADA and PSTY/ADA data.

Examination of Table 2 allows comparison of individual county data. The four large metropolitan counties of Davidson, Hamilton, Knox, and Shelby each had greater percentages of the state total adjusted local option sales tax ability than percentages of state total adjusted

property valuations. Collectively, these counties contained 52.989 percent of the state adjusted local option sales tax ability and 47.349 percent of the state adjusted property value. Twenty-nine of the 95 counties had higher percentages of state adjusted local option sales tax ability than state adjusted property valuations. Complete rankings of county adjusted local sales tax ability and adjusted property valuations are given in Columns 1 and 2, Table 4.

Relationship Between County Potential  
Sales Tax Yields/ADA and Potential  
Property Tax Yields/ADA

Formulae 1 and 3 were used to generate county PPTY/ADA and PSTY/ADA. PSTY/ADA and PPTY/ADA data represented the dollar amounts per pupil each county could raise from the property and retail sales bases if the state fiscal average rate were levied on each.

A rank correlation coefficient of +.516 was computed between counties ranked by PSTY/ADA and PPTY/ADA, null hypothesis 2 was rejected at both the .05 and .01 levels of significance. State-wide, county local option sales tax ability was significantly positively correlated with county property wealth.

The four large metropolitan counties of Tennessee ranked consistently high on PSTY/ADA and PPTY/ADA. Davidson ranked 1st and 2nd, Hamilton 2nd and 6th, Knox



TABLE 4

Tennessee County Ranks Based on Measures of Fiscal Capacity and  
Effort to Support Programs of Education

County	Capacity Ranks					Effort Ranks		
	Adjusted property valua- tions	Adjusted local option sales tax ability	Weighted average	PPTY per ADA	PSTY per ADA	Combined yields per ADA	Property	Local option sales tax Combined
Anderson	21	11	15	87	18	58	1	85 15
Bedford	26	30	27	10	12	10	81	68 83
Benton	76	62	73	81	43	69	20	77 35
Bledsoe	84	89	86	64	88	83	41	55 45
Blount	6	9	6	11	17	12	77	41 67
Bradley	10	12	11	21	19	19	74	31 61
Campbell	51	29	41	92	44	84	4	90 36
Cannon	57	79	64	3	62	7	93	70 95
Carroll	53	43	51	84	54	75	27	73 46
Carter	32	27	28	90	63	86	11	49 9
Cheatham	63	65	65	86	85	87	32	15 24
Chester	78	74	77	67	56	67	94	54 94
Claiborne	64	55	60	93	77	92	8	11 3
Clay	92	88	91	89	83	90	18	65 22

TABLE 4 (continued)

County	Capacity Ranks				Effort Ranks		
	Adjusted property valu- ations	Adjusted local option sales tax ability	Weighted average	PPTY per ADA	PSTY per ADA	Combined yields per ADA	Property tax Local option sales tax Combined
Cocke	14	37	44	56	49	54	44 48 52
Coffee	28	19	26	55	15	14	80 76 85
Crockett	62	72	67	52	84	68	83 35 76
Cumberland	27	39	29	19	47	27	50 53 60
Davidson	2	2	2	2	1	1	39 5 18
Decatur	80	75	79	54	42	52	56 39 56
DeKalb	77	69	75	60	48	55	23 79 42
Dickson	47	34	43	71	37	59	36 8 20
Dyer	22	23	23	13	20	16	95 24 93
Fayette	37	63	47	46	89	62	91 43 90
Fentress	74	70	74	68	73	73	60 90 86
Franklin	43	36	42	57	50	56	33 59 50
Gibson	9	18	20	49	29	43	70 45 65
Giles	45	47	46	39	36	41	2 37 1
Grainger	73	84	76	85	92	91	66 57 71
Greene	17	21	19	36	41	38	46 34 41
Grundy	87	77	84	94	82	94	9 9 4

TABLE 4 (continued)

County	Capacity Ranks					Effort Ranks			
	Adjusted property valua- tions	Adjusted local option sales tax ability	Weighted average	PPTY per ADA	PSTY per ADA	Combined yields per ADA	Property	Local option sales tax	Combined
Hamblen	13	14	13	14	9	14	71	21	59
Hamilton	3	4	3	6	2	3	25	19	19
Hancock	95	93	95	95	94	95	30	52	37
Hardeman	48	53	52	58	76	71	45	32	39
Hardin	49	46	49	40	27	35	68	62	75
Hawkins	31	38	31	63	79	76	14	69	11
Haywood	40	52	45	30	57	33	82	50	79
Henderson	69	51	63	88	40	78	10	78	28
Henry	34	32	30	31	16	23	29	56	43
Hickman	60	68	61	17	61	29	29	56	43
Houston	91	91	92	78	93	88	48	7	32
Humphreys	29	56	35	4	31	6	88	81	81
Jackson	86	87	87	59	86	77	43	60	51
Jefferson	33	48	38	41	68	48	35	16	25
Johnson	71	71	72	50	66	53	6	90	13
Knox	4	3	4	24	3	9	51	3	12
Lake	81	78	81	47	53	46	73	46	70

Table 4 (continued)

County	Adjusted property valua- tions	Capacity Ranks				Effort Ranks		
		Adjusted local option sales tax ability	Weighted average	PPTY per ADA	PSTY per ADA	Combined yields per ADA	Property	Local option sales tax
								Combined
Lauderdale	54	49	55	74	67	74	58	67
Lawrence	42	31	36	75	38	64	42	18
Lewis	83	82	81	48	64	50	67	90
Lincoln	35	45	37	42	52	45	64	23
Loudon	52	42	48	65	45	60	5	27
McMinn	23	22	24	44	25	34	16	64
McNairy	50	59	56	45	70	51	34	90
Macon	58	64	58	12	39	18	86	44
Madison	11	6	9	34	7	16	92	30
Marion	56	44	53	79	35	65	7	58
Marshall	55	54	57	38	32	37	17	12
Maury	15	15	14	28	14	21	72	14
Meigs	79	76	83	26	26	26	84	84
Monroe	59	40	54	83	33	66	28	28
Montgomery	16	8	12	66	13	47	49	1
Moore	88	94	90	9	90	24	55	90
Morgan	67	80	70	62	91	85	12	90

TABLE 4 (continued)

County	Capacity Ranks				Effort Ranks				
	Adjusted local option sales tax ability	Weighted average	PPTY per ADA	PSTY per ADA	Combined yields per ADA	Property	Local option sales tax	Combined	
Obion	25	26	25	27	23	25	89	38	80
Overton	70	66	68	80	71	80	52	17	40
Perry	85	90	89	15	80	32	38	80	48
Pickett	93	92	93	53	75	61	90	25	84
Polk	30	60	39	1	28	2	37	47	33
Putnam	20	20	21	16	11	15	57	66	66
Rhea	46	50	50	37	51	42	15	71	21
Roane	18	13	16	23	6	11	87	74	89
Robertson	38	33	33	70	55	70	24	6	7
Rutherford	8	10	8	22	21	20	53	22	49
Scott	61	58	59	77	60	72	21	90	57
Sequatchie	90	81	85	82	72	81	54	4	24
Sevier	24	17	22	25	5	13	31	20	29
Shelby	1	1	1	7	4	5	47	29	44
Smith	65	61	66	35	34	30	59	75	73
Stewart	75	86	80	18	81	36	62	13	55
Sullivan	5	5	5	5	8	4	40	36	34



3rd and 24th, and Shelby 4th and 7th, respectively. Complete rankings of county PSTY/ADA and PPTY/ADA are given in Columns 4 and 5, Table 4. Davidson, Hamilton, Knox, and Shelby counties had average PSTY/ADA and PPTY/ADA of \$202.34 and \$352.76, respectively, for a combined average of \$555.10. At the other extreme, Claiborne, Grundy, and Hancock counties had average PSTY/ADA and PPTY/ADA of \$51.11 and \$177.16, respectively, for a combined average of \$228.27/ADA.

Relationship Between County Adjusted  
Property Values and Combined Property  
and Local Retail Sales Ability Indices

The methodology outlined in the Tennessee Education Finance Act of 1977, Section 6, was used to calculate county adjusted property values. Formulae 4, 5, and 6 were used to combine property and local retail sales ability into a single index of capacity. County combined wealth indices represented weighted averages of each county's adjusted local option sales tax ability and percent of adjusted property value. The weightings were determined by the percents of the county revenue for the operation and maintenance of programs of education derived from the local sales tax and the county property tax. For the 1977 fiscal year 33.047 percent and 64.588 percent, respectively, came from these bases.

A rank correlation of +.990 was computed between county adjusted property values and combined ability

indices. Null hypothesis 3 was rejected at both the .05 and .01 levels of significance. A significant positive relationship was not unexpected since 64.588 percent of the combined ability index was derived from the value of (a) in Formula 4.

Thirty-five counties ranked lower on combined ability indices than on county adjusted property wealth alone. A required local contribution to the state minimum foundation program based on an ability index including adjusted local option sales tax ability would result in a lower local requirement for these 35 counties. The impact on the measure of wealth specified in the Tennessee Education Finance Act of 1977 by including local option sales tax ability can be examined by comparing Columns 2 and 4 of Table 2.

Relationship Between County PPTY/ADA  
and Combined County Potential Property  
and Sales Tax Yields/ADA

Formula 1 was used to calculate PPTY/ADA for each county. Combined county potential property and sales tax yields/ADA were calculated by summing individual county PPTY/ADA and PSTY/ADA.

A rank correlation of +.933 was computed between county PPTY/ADA and combined property and sales tax yields/ADA. This correlation forced rejection of null hypothesis 4 at both the .05 and .01 levels of significance. A significant positive correlation was expected due to the



significant positive correlation of  $+0.516$  between PSTY/ADA and PPTY/ADA data.

Forty-three counties ranked lower on combined measures of potential property and sales tax yields/ADA than on PPTY/ADA alone. The four large metropolitan counties each ranked higher on combined ability/ADA than on PPTY/ADA alone. Davidson moved from 2nd to 1st, Hamilton from 6th to 3rd, Knox from 24th to 9th, and Shelby from 7th to 5th, respectively. Complete county rankings of PPTY/ADA and combined property and sales tax yields are given in Columns 4 and 6, Table 4.

Relationship Between Local Option Sales Tax  
Ability and County Effort

To further clarify the problem studied, four questions were investigated to examine the relationship between measures of county local sales tax ability and measures of effort.

Question 3. To what extent were measures of capacity based on local option sales tax ability related to measures of effort based on local option sales tax ability?

Question 4. To what extent were measures of capacity based on local option sales tax ability related to measures of effort based on county property wealth?

Question 5. To what extent were measures of capacity based on county local option sales tax ability related to measures of effort based on combined sales tax and property wealth?

Question 6. To what extent were measures of capacity based on combined sales tax and property ability related to measures of effort based on combined sales tax and property wealth?

Relationship Between County Potential  
Sales Tax Yields/ADA and Local Option  
Sales Tax Effort

Data generated by Formulae 3 and 8 were ranked for correlation analysis. County PSTY/ADA represented the dollar yield/ADA from the local option sales tax base available to each county if the state fiscal average rate were levied. Local option sales tax effort indices were a measure of the extent to which this revenue potential was utilized by each county.

A rank correlation coefficient of  $+0.137$  was computed. The test of significance indicated that the relation was significant at neither the  $.05$  nor  $.01$  levels. Null hypothesis  $H_0$  was retained. There was no significant relationship found between county PSTY/ADA and county local option sales tax effort.

The four large metropolitan counties of Davidson, Hamilton, Knox, and Shelby ranked 1st, 2nd, 3rd, and 4th

in PSTY/ADA and had effort indices based on PSTY/ADA of 137.2, 101.0, 158.1, and 91.0, respectively. An index of 100.0 indicated a county was making the state fiscal average effort on a particular base. Column 8 of Table 4 shows the rankings of effort indices based on local option sales tax ability for each county.

Relationship Between County Potential  
Sales Tax Yields/ADA and County  
Property Wealth Effort/ADA

County property wealth effort data were generated by Formula 7. Effort indices based on property wealth were computed to measure each county's usage of property wealth compared to the state fiscal average usage.

A rank correlation coefficient of  $-.251$  was calculated. The test of significance indicated that the relation was significant at both the .05 and .01 levels. Null hypothesis 6 was rejected. There existed a significant inverse relation between county local option sales tax ability and county property effort. Then, high ability on the local retail sales base was associated with a low effort on the property base.

Davidson County ranked 1st in retail sales ability and 39th in property effort, Hamilton County 2nd in retail sales and 25th in property effort, Knox County 3rd in retail sales and 51st in property effort, and Shelby County 4th in retail sales and 47th in property effort. Columns 5 and 7 in Table 4 give a complete county listing of ranks.

Relationship Between County Potential  
Sales Tax Yields/ADA and Combined  
County Local Option Sales and  
Property Wealth Effort/ADA

County combined local option sales and property wealth effort/ADA data were calculated by utilizing Formula 9. County combined effort indices were a measure of each county's usage of both the property and retail sales bases relative to the state fiscal average usage of these combined bases. An index of 100.0 indicated a county to be exercising a total effort from the property and retail sales bases indicative of the state fiscal average effort.

A rank correlation of  $-.094$  was calculated between county PSTY/ADA and county effort based on combined retail sales and property ability. Null hypothesis 7 was retained at both the .05 and .01 levels of significance. No significant relationship existed between these variables.

Davidson County ranked 1st in PSTY/ADA and 19th in combined effort, Hamilton County ranked 2nd in PSTY/ADA and 20th in combined effort, Knox County ranked 3rd in PSTY/ADA and 13th in combined effort, and Shelby County ranked 4th in PSTY/ADA and 44th in combined effort. Columns 5 and 9 in Table 4 give a complete county listing of ranks.

Relationship Between Combined (PSTY and PPTY)/ADA and Combined (Local Option Sales and Property Tax Effort)/ADA

The relationship between measures of ability and effort based on combined retail sales and property ability in each county was analyzed. Data utilized in this analysis were generated by Formulae 4 and 9.

A rank order correlation of  $-.353$  was calculated. The test of significance indicated that the relation was significant at both the  $.05$  and  $.01$  levels. Null hypothesis 8 was rejected. There existed a significant inverse relation between county combined measures of ability and county combined measures of effort. Wealthier counties tended to make less effort while poorer counties exhibited greater effort.

Davidson, Hamilton, Knox, and Shelby Counties ranked 1st, 3rd, 9th, and 5th, respectively, on measures of combined ability. These same counties ranked 19th, 20th, 13th, and 44th, respectively, on measures of combined effort. Claiborne, Grundy, Hancock, and Union Counties ranked 92nd, 94th, 95th, and 93rd, respectively, on measures of ability and 4th, 5th, 37th, and 3rd, respectively, on measures of effort.

Summary

The salient relationships reported in Chapter IV are summarized in the following statements:

1. There existed a significant positive relationship between county adjusted local option sales tax ability and county adjusted property valuations.

2. There existed a significant positive relationship between county potential sales tax yields/ADA and county potential property tax yields/ADA.

3. There existed a significant positive relationship between county adjusted property valuations and combined ability indices based on property and local retail sales.

4. There existed a significant positive relationship between county potential sales tax yields/ADA and combined potential property and sales tax yields/ADA.

5. There was no significant relationship between county fiscal capacity as measured by potential sales tax yields/ADA and county local option sales tax effort/ADA.

6. There existed a significant inverse relationship between county fiscal capacity as measured by potential sales tax yields/ADA and county property wealth effort.

7. There was no significant relationship between county fiscal capacity as measured by potential sales tax yields/ADA and combined local option sales and property wealth effort/ADA.

8. There existed a significant inverse relationship between county fiscal capacity and effort based on combined retail sales and property ability.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This chapter has three separate but interrelated purposes: (1) to provide a summary review of the study in retrospect; (2) to cite the conclusions drawn from the study; and (3) to present some of the implications of the study.

#### Summary

The primary purpose of the study was to examine the relationships between measures of county local option sales tax ability and county fiscal capacity and effort to support the current operation and maintenance of programs of education. Two measures of ability were developed for the county local option sales tax and for county property wealth.

Firstly, each county's retail sales tax receipts for education were expressed as a percentage of the state retail sales tax receipts from that county. This method produced a measure of each county's local retail sales ability that facilitated analysis with each county's adjusted county property valuation expressed as a percent

of the state adjusted property valuation. County adjusted property valuations were the measures employed by the Tennessee Education Finance Act of 1977 to determine required county contributions to the Tennessee Minimum Foundation Program.

New measures of ability were developed for the study by combining adjusted local sales tax ability and adjusted property valuations. These new "combined ability indices" represented a weighted average of the local retail sales and property bases contained by each county. The weights assigned were determined by the state total county use of each base for the support of the current operation and maintenance of programs of education.

During the 1977 fiscal year, 33.047 percent and 54.588 percent of the county revenue receipts for current operation and maintenance were derived from the local retail sales and the property bases, respectively. A county's combined ability index (see Formula 4, Procedures section) for the 1978 fiscal year became

$$\begin{array}{rcccl} 33.047 & \text{(County adjusted local} & & 64.588 & \text{(County adjusted} \\ & \text{sales tax ability)} & + & & \text{property valuation)} \\ \hline & & & 97.635 & \end{array}$$

Secondly, a measure of potential revenue/ADA from the local option sales tax was developed. Each county's



potential was calculated by multiplying the state total county local option sales tax receipts for education by each county's percent of the state retail sales tax base. PSTY/ADA measures calculated in this manner were a function of each county's adjusted local retail sales ability and the state-wide county total use of the local option sales tax for support of education. Relationships between county PSTY/ADA and measures of county fiscal capacity and effort to support education were examined. Summary Table 5 shows the high, low, and mean county PSTY/ADA.

A corresponding measure of county property wealth was developed by projecting each county's potential revenue/ADA from the property base. The potential yield was calculated by multiplying each county's percent of the state adjusted property valuation by the state total county property tax receipts for education. PPTY/ADA indices calculated in this manner were a function of each county's adjusted property valuation and the statewide county total use of the adjusted property valuation for the support of education. Summary Table 6 shows the high, low, and mean county PPTY/ADA.

Three measures of effort were calculated for each county. The first set of effort indices represented each county's actual revenue receipts/ADA from the adjusted property base expressed as a percentage of that county's

TABLE 5  
Summary Data for County PSTY/ADA

	PSTY/ADA	County
High	\$ 255.83	Davidson
Low	32.61	Van Buren
Mean	92.12	---

TABLE 6  
Summary Data for County PPTY/ADA

	PPTY/ADA	County
High	\$ 495.29	Polk
Low	81.61	Hancock
Mean	213.69	---

PPTY/ADA. The second set of effort indices represented each county's actual revenue receipts/ADA from the adjusted local sales tax expressed as a percentage of that county's PSTY/ADA. The set of combined effort indices represented each county's total receipts from adjusted local sales and property ability expressed as a percentage of each county's total PPTY/ADA and PSTY/ADA. Summary Table 7 shows the high, low, and mean effort indices based upon property, local retail sales, and combined county effort for support of programs of education.

### Conclusions

Earlier, in an attempt to clarify the problem investigated, six questions were posed. For the purpose of citing the conclusions drawn from the study, these questions are restated and the conclusions are presented in the form of answers or statements related to the questions.

Conclusions concerning Question 1. To what extent were measures of fiscal capacity based on county local option sales tax ability related to measures of capacity as specified in the Tennessee Education Finance Act of 1977?

A significant relationship existed between adjusted local option sales tax ability and county adjusted property valuations. County adjusted property represented the measure employed by the Tennessee Education Finance Act

TABLE 7  
Summary Data for County Effort Indices

	Property effort	County	Sales tax effort	County(s)	Combined effort	County
High	224.4	Anderson	164.4	Montgomery	161.1	Giles
Low	27.4	Dyer	0.0	--- <sup>a</sup>	41.2	Cannon
Mean	96.2	--	67.6	---	88.0	---

<sup>a</sup>Campbell, Fentress, Hickman, Johnson, Lewis, McNairy, Moore, Morgan, Scott, and Unicoi.

of 1977. Adjusted local option sales tax ability were measures of the county retail sales base calculated utilizing the same rationale employed for determining county adjusted property valuations.

Each measure represented a county's percent of the total state property or retail sales base. Counties with high percentages of state property value tended to have high percentages of the state retail sales ability.

A significant relationship was also found to exist between local option sales tax ability and property wealth when the measures were scaled to reflect ability on a per ADA basis. Potential yields/ADA were calculated from both property and retail sales bases. Projected county yields were calculated by applying a rate determined by the state fiscal average use of each base. Counties with high per ADA property wealth were found to have high per ADA retail sales tax ability.

Conclusions concerning Question 2. To what extent were measures of capacity based on county property wealth alone related to combined capacity indices based on property and local option sales tax ability?

A significant relationship existed between county adjusted property valuations and combined property and local option sales tax ability indices. Combined property and local option sales tax ability indices used for this

comparison represented a weighted average of each county's percent of the total state property and retail sales bases. The weightings were determined by the state fiscal average use of each base for the support of education.

A significant relationship existed between local option sales tax ability and combined property and local retail sales ability when the measures were determined and scaled to reflect potential yields/ADA.

Conclusions concerning Question 3. To what extent were measures of capacity based on local option sales tax ability related to measures of effort based on local option sales tax ability?

No significant relationship existed between per pupil local option sales tax ability and county effort made from the local option sales tax base. Effort was operationally defined as the ratio of actual county revenue from the local option sales tax to potential county revenue from this base. Counties ranked by per ADA retail sales tax potential were not significantly related to counties ranked by effort from the local retail sales base.

Conclusions concerning Question 4. To what extent were measures of capacity based on local option sales tax ability related to measures of effort based on county property wealth?

A significant inverse relationship existed between counties ranked by sales tax ability and by property effort.

Counties low in local option sales tax ability tended to rank high in measures of effort based on property wealth. Counties high in measures of local option sales tax ability tended to rank low in measures of effort based on property wealth. The local retail sales tax ability measures used in this comparison were determined and scaled to reflect potential yields/ADA from this base.

Conclusions concerning Question 5. To what extent were measures of capacity based on county local option sales tax ability related to measures of effort based on combined sales tax and property ability?

No significant relationship existed between /ADA county local option sales tax ability and effort indices based on each county's use of both the property and retail sales bases relative to the state fiscal average use of these combined bases.

Conclusions concerning Question 6.. To what extent were measures of capacity based on combined sales tax and property ability related to measures of effort based on combined sales tax and property ability?

A significant inverse relation existed between counties ranked on combined retail sales and property measures of capacity and counties ranked by measures of combined effort. Counties wealthy in tax bases producing over 97 percent of all county revenue for the current operation

and maintenance of programs of education tended to rank low in measures of effort on these bases. Counties low in retail sales and property ability ranked significantly higher in combined measures of effort from these bases.

General conclusions. The development of the measures utilized in the study as well as the analysis of the specific relationships seemed to allow certain general conclusions to be drawn:

1. Much research has been generated in an attempt to adequately and equitably measure the ability of local jurisdictions to support programs of education.
2. Research review for this study expressed the desirability to include tax bases utilized for the support of education in fiscal capacity measures.
3. An index including tax bases utilized for the support of education with each base weighted by its percentage share of that support seems appropriate.
4. Local option sales tax ability can be measured in Tennessee in a manner consistent with present property measures utilized for capacity determination under the Tennessee Education Finance Act of 1977.



5. Since the county local option sales tax base provided over 33 percent of the county revenue receipts for the current operation and maintenance of programs of education, a measure of local option sales tax ability should be included in the state measure of county fiscal capacity.

### Implications

The purpose of this section is to provide implications from this study for future research, policy formulation, and/or program design in the area of Tennessee school finance.

One of the major implications of this study was that increased attention should be given to the relationships between measures of county fiscal capacity and effort. A basic assumption of this study was that similar fiscal relationships for the financing of public schools existent among various states allowed the acceptance of general statistical inference from this study. Therefore other states may wish to incorporate similar measures of fiscal capacity and effort into state plans for the financing of public education.

Several relationships discovered in this study imply that the present program for the funding of education in Tennessee allows high ability counties to make low effort while many counties with low capacity measures are required to make high effort to support their programs of education.

The data developed for this study also revealed that the equalization of effort among the counties (while a worthwhile goal) would not produce fiscal neutrality. If

each Tennessee county exerted the 1977 state fiscal average effort on both the local option sales tax and property bases, a range in yield per ADA of \$716.88 to \$115.05 would exist. This ratio, 6.2 to 1, implies that Tennessee must supplement any level of required local effort with adequate state equalization.

This study made no attempt to analyze fiscal capacity and effort in jurisdictions smaller than the county level. However, studies of this type should be undertaken in light of the arrangements found to exist between city, town, special, and county school districts. Intra-county local leeway on the property base was found to exist and to be exercised in most counties containing noncounty school districts. This situation only magnified the problem of inter-county capacity and effort disparity in the equitable allocation of state revenue for the financing of public education.

Tennessee may wish to meet both the need for reducing capacity disparity and the need for increasing available state equalizing funds by reducing the heavy local reliance on the property and local option sales taxes. These needs could be met by introducing a state property tax and/or by recapturing a portion of the local retail sales base by reducing the allowable local rate and concomitantly increasing the state rate.

Although this study made no attempt to determine the fiscal needs of counties in Tennessee for providing educational programs, an underlying philosophy guided this

investigation that each county should have an opportunity to enjoy whatever educational advantages accrue because of wealth. This philosophy coupled with measures of capacity and effort disparity reemphasized the need stated in Chapter I for valid measures of county fiscal capacity.

The Tennessee Education Finance Act of 1977 calculates the measure of county fiscal capacity from one tax base—property. Revenue from this base was found to comprise only 64 percent of the total county revenue receipts for the current operation and maintenance of public schools during the 1977 fiscal year. A measure of capacity representing this percentage of the county base for support of education does not capture the thrust of the major implications drawn from the review of literature provided in this study.

The State of Tennessee allows the taxing of the retail sales base at a rate not to exceed one-half of the state rate. One-half of the local levy must be spent for schools. This arrangement allows an amount equivalent to one-fourth of the yield from the state's greatest revenue producer—the retail sales base—to function as unequalized local leeway for education. The fiscal advantage to the county with high retail sales ability is both obvious and unfair. To compound the advantage locally, this measure of ability is not recognized in determining the required county share to participate in the state minimum foundation program.

Any measure of fiscal capacity not including a base yielding over 33 percent of the county revenue for education ignores the definition, the basic intent, and the purpose of fiscal capacity measures. A measure encompassing property and local sales tax ability would capture bases yielding over 97 percent of the county revenue receipts for education during the 1977 fiscal year. The state program of financing the public schools of Tennessee should not continue to ignore this source of local support in its determination of capacity.

This study also has provided implications for future research. Many questions are as yet unanswered regarding the relationships between measures of capacity and effort. Should adjustments be made for municipal overburdens? What socioeconomic factors in Tennessee impact effort? To what degree do inter-county shifts in the incidence of the local retail sales tax impact capacity?

While several facets of this study may or may not prove to be significant in the financing of education in Tennessee, none will overcome the weakness inherent in a poorly constructed distribution formula.

## APPENDIX

1976 County Property Valuation Data

County	1976 tax aggregate assessed valuation*	TVA payments direct to counties*	TVA payments through state to counties*	County tax rates**	TVA payments converted to property value	Adjusted property value
Anderson	98,788,915	18,359.36	98,921.03	5.57	2,105,573	100,894,488
Bedford	81,742,069	5,530.45	6,314.68	2.43	487,465	82,229,523
Benton	19,499,652	7,098.43	81,180.42	3.98	2,218,062	21,717,814
Bledsoe	14,787,484	15,984.89	4,264.45	3.38	599,093	15,386,577
Blount	217,067,600	12,092.88	36,538.77	2.60	1,870,448	218,938,048
Bradley	168,772,044	32,195.75	14,456.05	2.70	1,727,844	170,499,888
Campbell	45,456,353	20,283.02	37,010.51	4.95	1,157,445	46,613,798
Cannon	38,975,971	7,174.84	10,891.01	4.10	440,630	39,416,601
Carroll	44,038,170	11.78	40.94	3.00	1,757	44,039,927
Carter	63,435,521	34,147.98	14,405.69	4.45	1,091,094	64,526,615
Cheatam	33,918,088	---	---	4.25	---	33,918,088
Chester	19,543,120	---	---	2.62	---	19,543,120
Claiborne	31,600,927	1,975.36	24,175.90	4.32	605,353	32,206,280
Clay	10,171,402	---	---	4.20	---	10,171,402
Cocke	50,973,019	7,039.04	56,242.00	4.57	1,384,705	52,357,724
Coffee	72,776,778	2,698.92	2,662.41	3.07	174,636	72,951,414

APPENDIX (continued)

County	1976 tax aggregate assessed valuation*	TVA payments direct to counties*	TVA payments through state to counties*	County tax rates**	TVA payments converted to property value	Adjusted property value
Crockett	34,236,127	179.86	38.11	1.95	11,178	34,247,305
Cumberland	75,157,157	1,034.95	474.61	2.20	68,616	75,225,773
Davidson	1,714,745,092	10,175.07	41,738.92	4.11	1,263,114	1,716,008,206
Decatur	16,694,187	10,013.09	39,997.36	2.99	1,672,590	18,366,777
DeKalb	21,791,540	106.55	56.95	2.85	5,737	21,797,277
Dickson	50,186,231	1,356.60	1,381.25	4.00	68,446	50,254,677
Dyer	98,663,806	206.51	20.76	2.20	10,330	98,674,136
Fayette	59,609,334	---	---	1.90	---	59,609,334
Fentress	23,373,803	---	---	3.00	---	23,373,803
Franklin	51,135,956	10,239.75	57,408.66	3.00	2,254,947	53,390,903
Gibson	106,871,032	112.54	20.94	2.50	5,339	106,876,371
Giles	51,859,140	2,141.59	4,679.99	5.60	121,814	51,980,954
Grainger	21,764,072	5,623.68	66,466.75	3.48	2,071,564	23,835,636
Greene	118,699,314	20,586.36	10,455.27	3.08	1,007,845	119,707,159
Grundy	14,580,908	5,209.01	3,308.42	4.40	193,578	14,774,486
Hamblen	133,464,966	2,837.64	33,735.20	3.13	1,168,461	134,633,427

APPENDIX (continued)

County	1976 tax aggregate assessed valuation*	TVA payments direct to counties*	TVA payments through state to counties*	County tax rates**	TVA payments converted to property value	Adjusted property value
Hamilton	867,684,716	38,418.96	88,449.46	4.00	3,171,711	870,856,427
Hancock	5,804,093	142.86	35.42	3.62	4,925	5,809,018
Hardeman	48,092,562	---	---	2.55	---	48,092,562
Hardin	45,777,618	7,023.25	35,644.15	2.57	1,660,210	47,437,828
Hawkins	66,830,892	4,567.02	138,227.02	5.24	2,725,077	69,555,969
Haywood	57,914,461	1,250.49	299.36	2.33	66,517	57,980,978
Henderson	28,029,929	2,685.07	3,123.23	3.50	165,951	28,195,880
Henry	60,741,087	4,948.58	61,858.96	3.54	1,887,219	62,628,306
Hickman	37,432,605	13,026.19	13,732.05	4.00	669,856	38,102,461
Houston	10,612,016	1,046.21	14,070.97	2.90	521,282	11,133,299
Humphreys	65,981,928	11,264.68	95,250.45	2.35	4,532,559	70,514,487
Jackson	15,135,185	---	---	3.50	---	15,135,185
Jefferson	59,899,877	16,707.51	146,564.01	3.76	4,342,328	64,242,205
Johnson	24,847,731	2,430.27	24,477.58	4.79	552,768	25,400,499
Knox	733,599,923	19,258.81	93,121.81	3.89	2,888,962	736,488,885
Lake	17,913,933	---	---	2.60	---	17,913,933



APPENDIX (continued)

County	1976 tax aggregate assessed valuation*	TVA payments direct to counties*	TVA payments through state to counties*	County tax rates**	TVA payments converted to property value	Adjusted property value
Lauderdale	43,122,270	1,045.86	182.85	2.67	46,019	43,168,289
Lawrence	54,529,033	2,300.74	2,374.92	4.24	110,275	54,639,308
Lewis	16,860,761	11,067.02	2,597.37	2.75	496,887	17,357,648
Lincoln	61,004,730	3,706.01	4,733.83	2.45	344,483	61,349,213
Loudon	41,998,219	21,937.56	214,586.55	5.16	4,583,801	46,582,020
McMinn	90,505,482	40,970.76	61,494.24	5.50	1,863,000	92,368,482
McNairy	47,050,133	2,506.18	---	2.53	99,058	47,149,191
Macon	39,413,687	---	---	2.32	---	39,413,687
Madison	166,201,834	1,902.24	1,349.43	2.11	154,108	166,355,942
Marion	35,317,073	83,598.46	111,165.79	4.46	4,366,911	39,683,984
Marshall	40,170,980	7,943.63	7,463.93	3.65	422,125	40,593,105
Mauzy	126,609,907	10,501.80	10,215.58	2.80	739,906	127,349,813
Meigs	17,342,006	3,710.77	45,141.49	2.20	2,220,552	19,562,558
Monroe	33,807,878	26,717.58	156,468.86	3.70	4,950,985	38,758,863
Montgomery	125,232,971	762.74	958.53	3.00	57,376	125,290,347
Moore	14,025,348	2,131.76	5,598.07	2.79	277,055	14,302,403

Appendix (continued)

County	1976 tax aggregate assessed valuation*	TVA payments direct to counties*	TVA through state to counties*	County tax rates**	TVA payments converted to property value	Adjusted property value
Morgan	30,838,160	3,801.75	2,891.78	5.15	129,971	30,968,131
Obion	88,528,726	400.94	146.01	2.25	24,309	88,553,035
Overton	26,910,701	---	---	2.91	---	26,910,701
Perry	14,449,719	3,562.20	27,867.18	3.45	910,997	15,360,716
Pickett	7,311,738	---	---	2.30	---	7,311,738
Polk	64,108,476	111,342.61	132,313.15	3.90	6,247,584	70,356,060
Putnam	105,050,457	1,287.43	588.64	2.93	64,030	105,114,487
Rhea	48,236,216	6,340.72	98,899.11	3.74	2,813,899	51,050,115
Roane	108,350,741	20,781.47	167,807.78	2.50	7,543,570	115,894,311
Robertson	59,358,647	651.00	813.85	4.10	35,728	59,394,375
Rutherford	198,129,725	15,188.38	20,383.85	2.41	1,476,026	199,605,751
Scott	34,308,610	90.28	---	4.35	2,075	34,310,685
Sequatchie	13,462,492	7,375.42	7,211.69	3.22	453,016	13,915,508
Sevier	88,482,617	8,962.67	11,764.73	3.98	520,789	89,003,406
Shelby	2,231,080,733	37,844.24	160,672.86	4.00	4,962,928	2,246,043,661

Appendix (continued)

County	1976 tax aggregate assessed valuation*	TVA payments direct to counties*	TVA payments through state to counties*	County tax rates**	TVA payments converted to property value	Adjusted property value
Smith	31,700,920	2,502.79	8,792.41	2.20	513,418	32,214,338
Stewart	16,370,703	1,746.62	146,195.53	2.55	5,801,653	22,172,356
Sullivan	569,175,562	15,842.86	43,225.98	3.18	1,857,511	571,033,073
Sumner	207,325,111	692.36	11,715.32	3.88	319,786	207,644,897
Tipton	58,575,702	1,486.06	833.50	3.75	61,855	58,637,557
Trousdale	17,014,115	---	12,495.55	2.00	624,778	17,638,893
Unicoi	24,015,038	493.35	247.24	4.58	16,170	24,031,208
Union	12,178,408	4,594.52	86,653.84	4.74	1,925,071	14,103,479
Van Buren	6,601,210	9,069.16	6,204.77	2.60	587,459	7,188,669
Warren	53,547,197	37,010.68	33,403.20	2.94	2,395,030	55,942,227
Washington	190,665,570	13,016.19	20,413.59	3.10	1,078,380	191,743,950
Wayne	28,735,311	19,188.11	628.29	2.25	880,729	29,616,040
Weakley	60,533,325	1,012.17	1,037.05	3.37	60,808	60,594,133
White	29,966,683	32,076.21	7,000.99	2.52	1,550,683	31,517,366
Williamson	137,769,572	5,154.89	17,057.34	5.10	435,534	138,205,106
Wilson	131,070,239	7,090.90	11,838.94	3.44	550,286	131,620,525

\*Tennessee State Board of Equalization "1976 Tax Aggregate Report."

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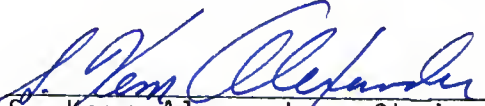


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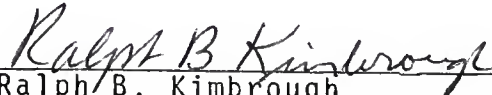
Benjamin Horace Brown, Jr., was born January 3, 1940, at Nashville, Tennessee. In June, 1958, he was graduated from Lipscomb High School in Nashville. From 1958 until 1965 he was employed in the bookkeeping and data processing departments of Third National Bank in Nashville. In June 1964 he received the degree Bachelor of Arts with majors in history and mathematics from David Lipscomb College. From 1965 until 1972 he served as a teacher of mathematics at Stratford High School in Nashville. In 1971 he received the degree Master of Arts from Middle Tennessee State University with a major in mathematics. From September 1972 until August 1973 he served as a Fellow of the National Educational Finance Project at the University of Florida while pursuing his work toward the degree of Doctor of Philosophy. From December 1977 until the present time he has served as Assistant Director of the Tennessee School Finance Study.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

  
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Professor of Educational  
Administration

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Ralph B. Kimbrough  
Professor of Educational  
Administration

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